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## NEW MEXICO ENVIRONMENT DEPARTMENT

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RYAN FLYNN  
Cabinet Secretary  
BUTCH TONGATE  
Deputy Secretary

### Certified Mail – Return Receipt Requested

January 8, 2015

Phillip Howard, General Mine Manager  
Chevron Mining, Inc., Questa Mine  
P.O. Box 469  
Questa, NM 87556

**Re: Chevron Mining, Inc. (CMI), Questa Mine; Major Individual Permit; SIC 1061; NPDES Compliance Evaluation Inspection (CEI); NM0022306; September 23 & 24, 2014**  
**Revised**

Dear Mr. Howard:

Enclosed please find a copy of the report and check list for the referenced inspection that the New Mexico Environment Department (NMED) conducted at your facility on behalf of the U.S. Environmental Protection Agency (USEPA). This inspection report will be sent to the USEPA in Dallas for their review. These inspections are used by USEPA to determine compliance with the National Pollutant Discharge Elimination System (NPDES) permitting program in accordance with requirements of the federal Clean Water Act.

A list of revisions and clarifications to the previous November 24, 2014 CEI report are attached. Introduction, treatment scheme, and problems noted during this inspection based on information provided by CMI representatives on or by October 6, 2014 are discussed in the "Further Explanations" section of the inspection report. CMI's letter dated December 22, 2014 responding to the CEI Report dated November 24, 2014 are also attached.

You are encouraged to review the inspection report, required to correct any problems noted during the inspection, and advised to modify your operational and/or administrative procedures, as appropriate. If you have comments on or concerns with the basis for the findings in the NMED inspection report, please contact us (see the address below) in writing within 30 days from the date of this letter. Further, you are encouraged to notify in writing both the USEPA and NMED regarding modifications and compliance schedules at the addresses below:

Racquel Douglas  
US Environmental Protection Agency, Region VI  
Enforcement Branch (6EN-WM)  
Fountain Place  
1445 Ross Avenue  
Dallas, Texas 75202-2733

Bruce Yurdin  
New Mexico Environment Department  
Surface Water Quality Bureau  
Point Source Regulation Section  
P.O. Box 5469  
Santa Fe, New Mexico 87502

If you have any questions about this inspection report, please contact Erin Trujillo at 505-827-0418 or at erin.trujillo@state.nm.us.

**CMI Questa Mine - NM0022306**

**January 8, 2015**

**Page 2 of 2**

Sincerely,

*/s/Bruce J. Yurdin*

Bruce J. Yurdin  
Program Manager  
Point Source Regulation Section  
Surface Water Quality Bureau

cc: Rashida Bowlin, USEPA (6EN-AS) by e-mail  
Carol Peters-Wagnon, USEPA (6EN-WM) by e-mail  
Racquel Douglas, USEPA (6EN-WM) by e-mail  
Gladys Gooden-Jackson, USEPA (6EN-WC) e-mail  
Brent Larsen and Tung Nguyen, USEPA (6WQ-PP) by e-mail  
Isaac Chen, USEPA (6WQ-PP) by e-mail  
Gary Baumgarten, USEPA (6SF-RA) by e-mail  
Robert Italiano, NMED District II by e-mail  
Anne Mauer, Chevron-Questa Mine Permit Lead, NMED GWQB by e-mail  
Joseph C. Fox, NMED GWQB by e-mail  
Armando Martinez, Chevron Environmental Management Company, Env. Mngr. by e-mail  
Jeff Schoenbacker, Chevron Environmental Management Company, Proj. Mngr. by e-mail  
Tony Loston, USEPA (6EN-WM) by e-mail

**Chevron Mining, Inc. (CMI) - Questa Mine - NM0022306  
NPDES Compliance Evaluation Inspection (CEI) Report**

**List of Revisions and Clarifications**

- 1) USEPA Form 3560, Re-signed 01/08/2015
- 2) USEPA CEI Checklist, Page 2 of 3, Section E, Flow Measurement, Clarified details for Outfall 004 and Outfall 005, Revised text double underlined
- 3) Further Explanations, Page 12 of 22, 1<sup>st</sup> and 2<sup>nd</sup> paragraph, Revised text, Revised and added text double underlined
- 4) Further Explanations, Page 12 of 22, Reformatted paragraphs (no text changes)
- 5) Further Explanations, Page 16 of 22, Section D, Corrected paragraph outline header, Revised text double underlined
- 6) Further Explanations, Page 16 of 22, Section E, Clarified paragraph outline header, Added text double underlined
- 7) Further Explanations, Page 16 of 22, Section E, Re-moved last paragraph--moved last paragraph to Page 17 of 22
- 8) Further Explanations, Page 17 of 22, Section E, Clarified (revised, reordered and added) text, Revised, reordered and added text double underlined



## SECTION A - PERMIT VERIFICATION

PERMIT SATISFACTORILY ADDRESSES OBSERVATIONS

 S  M  U  NA (FURTHER EXPLANATION ATTACHED Yes)

DETAILS: **Unauthorized discharges described in USEPA NPDES 2013 Fact Sheet and USEPA 2010 ROD for tailings facility continue under a schedule of compliance. Visible precipitates were observed at Red River and Spring 13 & 39 interception system. See further explanation.**

1. CORRECT NAME AND MAILING ADDRESS OF PERMITTEE.  Y  N  NA
2. NOTIFICATION GIVEN TO EPA/STATE OF NEW DIFFERENT OR INCREASED DISCHARGES. **See above**  Y  N  NA
3. NUMBER AND LOCATION OF DISCHARGE POINTS AS DESCRIBED IN PERMIT.  Y  N  NA
4. ALL DISCHARGES ARE PERMITTED. **See above**  Y  N  NA

## SECTION B - RECORDKEEPING AND REPORTING EVALUATION

RECORDS AND REPORTS MAINTAINED AS REQUIRED BY PERMIT.

 S  M  U  NA (FURTHER EXPLANATION ATTACHED Yes)

DETAILS: **USEPA NetDMR subscriber agreement was approved 06/27/2011 and Permittee submits DMRs electronically.**

1. ANALYTICAL RESULTS CONSISTENT WITH DATA REPORTED ON DMRs.  Y  N  NA
2. SAMPLING AND ANALYSES DATA ADEQUATE AND INCLUDE.  S  M  U  NA
- a) DATES, TIME(S) AND LOCATION(S) OF SAMPLING. **Only one time recorded**  Y  N  NA
- b) NAME OF INDIVIDUAL PERFORMING SAMPLING  Y  N  NA
- c) ANALYTICAL METHODS AND TECHNIQUES.  Y  N  NA
- d) RESULTS OF ANALYSES AND CALIBRATIONS.  Y  N  NA
- e) DATES AND TIMES OF ANALYSES. **See above**  Y  N  NA
- f) NAME OF PERSON(S) PERFORMING ANALYSES.  Y  N  NA
3. LABORATORY EQUIPMENT CALIBRATION AND MAINTENANCE RECORDS ADEQUATE. **Contract lab not inspected. YSI pH Meters**  S  M  U  NA
4. PLANT RECORDS INCLUDE SCHEDULES, DATES OF EQUIPMENT MAINTENANCE AND REPAIR.  S  M  U  NA
5. EFFLUENT LOADINGS CALCULATED USING DAILY EFFLUENT FLOW AND DAILY ANALYTICAL DATA.  Y  N  NA

## SECTION C - OPERATIONS AND MAINTENANCE

TREATMENT FACILITY PROPERLY OPERATED AND MAINTAINED.

 S  M  U  NA (FURTHER EXPLANATION ATTACHED No)

DETAILS: **No treatment units required for water collection systems at this time. Water treatment plant was not completed.**

1. TREATMENT UNITS PROPERLY OPERATED.  S  M  U  NA
2. TREATMENT UNITS PROPERLY MAINTAINED.  S  M  U  NA
3. STANDBY POWER OR OTHER EQUIVALENT PROVIDED. **See further explanation for written procedures**  S  M  U  NA
4. ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES AVAILABLE. **See further explanation**  S  M  U  NA
5. ALL NEEDED TREATMENT UNITS IN SERVICE. **See above**  S  M  U  NA
6. ADEQUATE NUMBER OF QUALIFIED OPERATORS PROVIDED. **See above**  S  M  U  NA
7. SPARE PARTS AND SUPPLIES INVENTORY MAINTAINED.  S  M  U  NA
8. OPERATION AND MAINTENANCE MANUAL AVAILABLE. **See above**  Y  N  NA  
 STANDARD OPERATING PROCEDURES AND SCHEDULES ESTABLISHED. **See further explanation (water collection)**  Y  N  NA  
 PROCEDURES FOR EMERGENCY TREATMENT CONTROL ESTABLISHED. **See above**  Y  N  NA

## SECTION C - OPERATIONS AND MAINTENANCE (CONT'D)

9. HAVE BYPASSES/OVERFLOWS OCCURRED AT THE PLANT OR IN THE COLLECTION SYSTEM IN THE LAST YEAR?  Y  N  NA  
 IF SO, HAS THE REGULATORY AGENCY BEEN NOTIFIED?  Y  N  NA  
 HAS CORRECTIVE ACTION BEEN TAKEN TO PREVENT ADDITIONAL BYPASSES/OVERFLOWS?  Y  N  NA
10. HAVE ANY HYDRAULIC OVERLOADS OCCURRED AT THE TREATMENT PLANT? **No treatment plant / Not applicable**  Y  N  NA  
 IF SO, DID PERMIT VIOLATIONS OCCUR AS A RESULT?  Y  N  NA

## SECTION D - SELF-MONITORING

PERMITTEE SELF-MONITORING MEETS PERMIT REQUIREMENTS.  S  M  U  NA (FURTHER EXPLANATION ATTACHED Yes ).  
 DETAILS:

1. SAMPLES TAKEN AT SITE(S) SPECIFIED IN PERMIT.  Y  N  NA
2. LOCATIONS ADEQUATE FOR REPRESENTATIVE SAMPLES.  Y  N  NA
3. FLOW PROPORTIONED SAMPLES OBTAINED WHEN REQUIRED BY PERMIT.  Y  N  NA
4. SAMPLING AND ANALYSES COMPLETED ON PARAMETERS SPECIFIED IN PERMIT.  Y  N  NA
5. SAMPLING AND ANALYSES PERFORMED AT FREQUENCY SPECIFIED IN PERMIT. **pH**  Y  N  NA
6. SAMPLE COLLECTION PROCEDURES ADEQUATE. **TSS, WET, Cyanide**  Y  N  NA
- a) SAMPLES REFRIGERATED DURING COMPOSITING.  Y  N  NA
- b) PROPER PRESERVATION TECHNIQUES USED. **TSS, WET, Cyanide cooling preservation**  Y  N  NA
- c) CONTAINERS AND SAMPLE HOLDING TIMES CONFORM TO 40 CFR 136.3. **pH not documented**  Y  N  NA
7. IF MONITORING AND ANALYSES ARE PERFORMED MORE OFTEN THAN REQUIRED BY PERMIT, ARE THE RESULTS REPORTED IN PERMITTEE'S SELF-MONITORING REPORT?  Y  N  NA

## SECTION E - FLOW MEASUREMENT

PERMITTEE FLOW MEASUREMENT MEETS PERMIT REQUIREMENTS.  S  M  U  NA (FURTHER EXPLANATION ATTACHED Yes )  
 DETAILS: **Outfall 004 and Outfall 005 flow measurement devices include weir required in Part 1.A of Permit and 9-in Parshall Flume (no reported discharge). Expected range of flows at Outfall 004 and Outfall 005 not documented.**

1. PRIMARY FLOW MEASUREMENT DEVICE PROPERLY INSTALLED AND MAINTAINED.  Y  N  NA  
 TYPE OF DEVICE **Outfall 002 vault = Yokogawa Magnetic Flow Meter/Remote Flowtube**
2. FLOW MEASURED AT EACH OUTFALL AS REQUIRED. **Outfall 002**  Y  N  NA
3. SECONDARY INSTRUMENTS (TOTALIZERS, RECORDERS, ETC.) PROPERLY OPERATED AND MAINTAINED.  Y  N  NA
4. CALIBRATION FREQUENCY ADEQUATE. **Not documented**  Y  N  NA  
 RECORDS MAINTAINED OF CALIBRATION PROCEDURES. **Outfall 002 Manufacture Test Certificate dated 2008**  Y  N  NA  
 CALIBRATION CHECKS DONE TO ASSURE CONTINUED COMPLIANCE. **Not documented**  Y  N  NA
5. FLOW ENTERING DEVICE WELL DISTRIBUTED ACROSS THE CHANNEL AND FREE OF TURBULENCE. **Outfall 002**  Y  N  NA
6. HEAD MEASURED AT PROPER LOCATION. **Outfall 002**  Y  N  NA
7. FLOW MEASUREMENT EQUIPMENT ADEQUATE TO HANDLE EXPECTED RANGE OF FLOW RATES. **Outfall 002 =Y**  Y  N  NA

## SECTION F - LABORATORY

PERMITTEE LABORATORY PROCEDURES MEET PERMIT REQUIREMENTS.  S  M  U  NA (FURTHER EXPLANATION ATTACHED Yes )  
 DETAILS: **Contract and subcontract laboratories not inspected. Permittee conducts pH monitoring on site.**

1. EPA APPROVED ANALYTICAL PROCEDURES USED (40 CFR 136.3 FOR LIQUIDS, 503.8(b) FOR SLUDGES). **pH, TSS**  Y  N  NA

**SECTION F - LABORATORY (CONT'D)**

2. IF ALTERNATIVE ANALYTICAL PROCEDURES ARE USED, PROPER APPROVAL HAS BEEN OBTAINED.  Y  N  NA
3. SATISFACTORY CALIBRATION AND MAINTENANCE OF INSTRUMENTS AND EQUIPMENT. **See further explanation**  S  M  U  NA
4. QUALITY CONTROL PROCEDURES ADEQUATE. **See further explanation**  S  M  U  NA
5. DUPLICATE SAMPLES ARE ANALYZED. **100 (pH)** % OF THE TIME.  Y  N  NA
6. SPIKED SAMPLES ARE ANALYZED. **100 (Laboratory)** % OF THE TIME.  Y  N  NA
7. COMMERCIAL LABORATORY USED.  Y  N  NA

LAB NAME **ALS (1-970-490-1511)**  
 LAB ADDRESS **225 Commerce Drive, Fort Collins, CO 80524**  
 PARAMETERS PERFORMED **Metals, Fluoride, TSS**

**GEI Consultants,**  
**4601 DTC Boulevard, Ste 900, Denver, CO 80237**  
**WET**

**SECTION G - EFFLUENT/RECEIVING WATERS OBSERVATIONS.**  S  M  U  NA (FURTHER EXPLANATION ATTACHED Yes).

OUTFALL NO.	OIL SHEEN	GREASE	TURBIDITY	VISIBLE FOAM	FLOAT SOL.	COLOR	OTHER
<b>new 001</b>	<b>Not Constructed</b>	<b>NA</b>					
<b>002</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
<b>004</b>	<b>No Discharge</b>	<b>NA</b>					
<b>005</b>	<b>No Discharge</b>	<b>NA</b>					

RECEIVING WATER OBSERVATIONS **No reported exceedances, but reviewed pH, WET, TSS effluent monitoring was not evaluated / (not documented or described to be per approved USEPA methods – see above).**

**SECTION H - SLUDGE DISPOSAL**

SLUDGE DISPOSAL MEETS PERMIT REQUIREMENTS.  S  M  U  NA (FURTHER EXPLANATION ATTACHED No).  
 DETAILS:

1. SLUDGE MANAGEMENT ADEQUATE TO MAINTAIN EFFLUENT QUALITY.  S  M  U  NA
2. SLUDGE RECORDS MAINTAINED AS REQUIRED BY 40 CFR 503.  S  M  U  NA
3. FOR LAND APPLIED SLUDGE, TYPE OF LAND APPLIED TO: **NA** (e.g., FOREST, AGRICULTURAL, PUBLIC CONTACT SITE)

**SECTION I - SAMPLING INSPECTION PROCEDURES** (FURTHER EXPLANATION ATTACHED No).

1. SAMPLES OBTAINED THIS INSPECTION.  Y  N  NA
2. TYPE OF SAMPLE OBTAINED  
 GRAB \_\_\_\_\_ COMPOSITE SAMPLE \_\_\_\_\_ METHOD \_\_\_\_\_ FREQUENCY \_\_\_\_\_
3. SAMPLES PRESERVED.  Y  N  NA
4. FLOW PROPORTIONED SAMPLES OBTAINED.  Y  N  NA
5. SAMPLE OBTAINED FROM FACILITY'S SAMPLING DEVICE.  Y  N  NA
6. SAMPLE REPRESENTATIVE OF VOLUME AND MATURE OF DISCHARGE.  Y  N  NA
7. SAMPLE SPLIT WITH PERMITTEE.  Y  N  NA
8. CHAIN-OF-CUSTODY PROCEDURES EMPLOYED.  Y  N  NA
9. SAMPLES COLLECTED IN ACCORDANCE WITH PERMIT.  Y  N  NA

**Chevron Mining Inc. (CMI)**  
**Questa Mine**  
**Compliance Evaluation Inspection**  
**NPDES Permit No. NM0022306**  
**September 23 & 24, 2014**

**Further Explanations – Introduction and Background**

**Introduction**

On September 23 and 24, 2014, a Compliance Evaluation Inspection (CEI) was conducted by Erin S. Trujillo, accompanied by Daniel Valenta and Sarah Holcomb, both of the State of New Mexico Environment Department (NMED), Surface Water Quality Bureau (SWQB) at the Chevron Mining Inc. (CMI), Questa Mine (formerly Molycorp) facility near the village of Questa, Taos County, New Mexico.

U.S. Environmental Protection Agency (USEPA), Region 6, Record of Decision (ROD), Molycorp, Inc., Questa, New Mexico, CERCLIS ID No: NMD002899094, dated December 20, 2010 is the decision document that presents the “Selected Remedy” for the Site chosen in accordance with Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The facility or site was placed on USEPA National Priorities List (NPL) of Superfund Sites. USEPA decided to continue or proceed with National Pollutant Discharge Elimination System (NPDES) permitting for some discharges under the Selected Remedy (briefly summarized below).

Questa Mine is classified as a major facility discharger under the federal Clean Water Act, Section 402 NPDES permit program and is assigned permit number NM0022306. The facility is located in the watershed of the Red River which includes several tributaries, including Sulfur Gulch, Spring Gulch, Goathill Gulch and Capulin Canyon. Discharges from four outfalls (briefly summarized below) are authorized by USEPA NPDES Permit No. NM0022306 to Red River in *State of New Mexico Standards for Interstate and Intrastate Surface Waters* Segment 20.6.4.122 New Mexico Administrative Code (NMAC) of the Rio Grande Basin. Designated uses for this segment of Red River are coldwater aquatic life, fish culture, irrigation, livestock watering, wildlife habitat and primary contact.

Storm water discharges associated with industrial activity at the facility are also regulated by USEPA’s Multi-Sector General Permit, which requires a Storm Water Pollution Prevention Plan (SWPPP). CMI submitted a Notice of Intent (NOI) on January 5, 2009 (active NPDES Tracking No. NMR05GC01 with coverage on February 4, 2009) to obtain permit coverage under the 2008 Multi-Sector General Permit (MSGP) for industrial stormwater discharges. Prior to that, Molycorp, Inc. submitted a NOI (expired Tracking Number NMR05A913) on January 25, 2001 to obtain coverage under the 2000 MSGP. An industrial stormwater MSGP CEI was not conducted on the day of this CEI.

Other permits for the Questa Mine activities include NMED GWQB ground water discharge permits DP-1055 and DP-933 and the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) Mining and Minerals Division (MMD) permit TA001RE.

Upon arrival and after a safety orientation at approximately 0945 hours on the day of the inspection, the inspector made introductions, presented credentials, and discussed the purpose of the inspection with Armando Martinez, Environmental Manager; Jeff Schoenbacker, Project Manager; Amanda Deringer, Project Manager, and Michael J. LeMoine, Compliance Assurance Coordinator of Chevron Environmental Management Company (Chevron EMC). Anne Mauer, Chevron-Questa Mine Permit Lead, NMED Groundwater Quality Bureau (GWQB) also participated during portions of the inspection on September 23, 2014. The inspectors and Ms. Mauer toured portions of the facility with Mr. Schoenbacker on September 23, 2014. Ms. Trujillo and Ms. Holcomb toured the tailing facility with Mr. Schoenbacker and Cassandra Padilla, Senior Sampling Specialist, Chevron EMC on September 23, 2014; and portions of the mine site facility with Ms. Deringer on September 24, 2014. Additional information on the status of construction of the new water treatment system at the mill site was obtained from Steve Anderson, Area Manager, Questa Water Projects, CMI on September 24, 2014. A brief exit interview was conducted on site to

discuss preliminary findings with Mr. Martinez, Mr. Schoenbacker, and Ms. Deringer. Mr. Anderson and Mr. Jeffery Smith, Operations Assurance Compliance for Water Treatment System, CMI were also in attendance during the exit interview on September 24, 2014. The inspectors left the site at approximately 1230 hours on September 24, 2014. Ms. Trujillo conducted a follow up meeting with Mr. Martinez and Mr. Schoenbacker on September 29, 2014 by telephone. Review of files includes additional information provided by mail by Mr. Schoenbacker received on October 6, 2014. E-mail requests prior to and after CEI for recordkeeping are in Attachment A.

### **Brief Site Background and Activities Summary**

Molybdenum mining at the facility began in 1919. Mining operations had three distinct operational phases: 1) conventional underground mining, which occurred from about 1919 to 1958, 2) open pit mining, which was conducted from 1965 to 1981 and (3) underground block cave mining, which started in 1983. The mining of this third deposit was temporarily discontinued in 1992, and resumed in 1996. CMI announced the cessation of operations at the mine on June 2, 2014.

The facility includes the underground molybdenum mine, mill area, tailing disposal impoundments (tailing facility), historic open pit and massive waste rock piles. Rock piles, approximately 750 acres, at the mine site include Capulin, Goathill North, Goathill South, Sugar Shack West, Sugar Shack South, Middle, Sulphur Gulch South, Spring Gulch and Sulphur Gulch North / Blind Gulch.

After the molybdenum was extracted at the mine through milling and concentrating operations, the spent tailing was disposed at impoundments at the tailing facility beginning in 1966. Dam No. 1 and Dam No. 4 were constructed in 1966 and 1971, respectively. The diversion channels along the west and east perimeter of the ponds were constructed in 1975 to divert surface water flow around the facility to the Red River. In 1991, Dam No. 5A was constructed. Tailing deposition ceased in 1992 with the temporary shutdown of mining operations, but restarted in 1996 behind Dam No. 5A. Since its construction in 1966, over 100 million tons of fine-grained tailing have been deposited at the tailing facility. The area of the tailing facility is approximately 1,430 acres. The thickness of the tailing deposit varies from over a few tens of feet to over 200 feet.

Spent tailing was transported as slurry in two 14-inch pipes from the mill area to the tailing facility. The pipeline only carried tailing slurry when the mill operated. The tailing pipeline originally consisted of two steel pipes. However, the pipes were found to wear from the abrasion of the tailing slurry. Over 230 reported tailing spills occurred from 1966 through 1991 along the Red River floodplain, mostly as a result of the abrasion. The pipes were eventually replaced with 14-inch outer diameter, rubber-lined steel pipes. Only three spills were reported between 1996 and 2010. No tailing spills have been reported since the effective date of the current USEPA NPDES Permit No. NM022306. Since the mill is inactive, no new tailing is sent to the tailing facility for disposal.

There are two basins for tailing management during maintenance or if a problem develops with the pipeline located along the pipeline corridor--the Upper Dump Sump and Lower Dump Sump. The Upper Dump Sump, lined with an impermeable membrane, is located adjacent to the Red River and across State Highway 38 from the CMI administrative area at the mine site. The Lower Dump Sump, lined with concrete, is located adjacent to the Red River on Old Red River Road.

A hydrological study completed by USEPA indicated a probable hydraulic connection between the tailing impoundments and the Red River, as well as between the mine waste rock, natural weathering features (known as hydrothermal alteration scars), and seepage discharges to the Red River (USEPA ROD 2.6 History of Federal and State Investigations). United States Geological Survey (USGS) Chemical Modeling of Acid Waters Project abstract, <http://nm.water.usgs.gov/projects/questa/> updated as December 26, 2012, summarizes the Questa Baseline and Pre-Mining Ground-Water Quality Investigation, Red River Valley Basin, New Mexico, June 2007 – present. USGS and the NMED entered into a Joint Powers Agreement as of April 30, 2001. The main objective of the investigation is to infer the pre-mining ground-water quality at the Questa Molycorp mine site. Sampling of Red River is also including in the investigation.

CMI operates a groundwater seepage interception system at the tailing facility, underground mine dewatering collection system, storm water and surface water seepage collection, conveyance, and disposal systems to control discharges. Collected underground mine water, is conveyed by centrifugal pumps and sump pumps toward the east to a tunnel or decline from the underground mine to the mill area to a sump (Sump 5000) housed at the mill area. Collected water (seepage-impacted alluvial ground water collected at the ground water withdrawal well system along the roadside waste rock piles and spring interception collection systems at Spring 13 and Spring 39) continue to be combined at Sump 5000. Lime is added to collected seepage water to adjust the pH of the water between 6.0 to 9.0 standard units to meet NMED GWQB DP-933 requirements. Collected water continues to be transported through the pipeline and disposed at the tailing facility.

CMI is planning to initiate closeout activities with decommissioning and demolition of selected surface facilities at the mill area (limited Phase 1). Decommissioning and demolition of remaining surface facilities at the mill area, mine area, and tailing facility will occur under a subsequent phase.

Additional information for site background and activities includes, but is not limited to:

- NPL Site Narrative for Chevron Questa Mine at <http://www.epa.gov/superfund/sites/npl/nar1841.htm>
- USEPA Region 6 Superfund web site at [http://www.epa.gov/region6/region-6/nm/nm\\_molycorp.html](http://www.epa.gov/region6/region-6/nm/nm_molycorp.html)
- USEPA Region 6 NPDES Response to Comments and 2013 Final Permit for CMI, Questa Mine at <http://www.nmenv.state.nm.us/swqb/NPDES/Permits/NM0022306-Chevron-Questa.pdf>

### **Summary of CERCLA Selected Remedy / Relationship to NPDES Authorized Discharges and Outfalls**

Locations of the major components of the Selected Remedy include mill area; mine site area; tailing facility area; Red River, riparian, and south of tailing facility area; and Eagle Rock Lake. Overall site cleanup strategy, as summarized in USEPA ROD 2010 Section 1.4.1, includes:

*The Selected Remedy focuses on engineering controls for source containment of waste rock at the mine site and tailing at the tailing impoundment as sources of acid rock drainage or tailing seepage that contaminates ground water, surface water, and sediment at the Site. The Selected Remedy also focuses on active ground water remediation (extraction, seepage interception) and treatment, soil removals to address polychlorinated biphenyl (PCB) and molybdenum contamination, and the dredging and removal of lake sediment to address metals contamination. By focusing on source containment and ground water remediation at the mine site, including seeps and springs at zones of ground water upwelling, the Selected Remedy will improve the water quality of the Red River. The Selected Remedy takes into account the current and reasonably anticipated future land uses. It also takes into account the current and potential future uses of ground water resources at the Site, as well as New Mexico statutes and regulations for the abatement and protection of ground water as Applicable or Relevant and Appropriate Requirements (ARARs).*

Performance monitoring of Red River, seeps and springs is included with the components of the Selected Remedy. Selected Remedy Performance Monitoring and reporting is not a specific condition of the USEPA NPDES Permit No. NM022306.

### **Mine Site Area**

The component of the Selected Remedy for the mine site area, as summarized in the USEPA ROD 2010, is source containment by re-grading and re-contouring waste rock piles to achieve a minimum interbench slope, including partial to complete removal of waste rock to accommodate slope requirements, followed by cover, amendment application and revegetation; surface water (seepage) interception, underground mine dewatering, and ground water extraction; and water treatment. USEPA ROD 2010, Section 4.3.2 (Description of the Selected Remedy, Major Components of the Selected Remedy, Mine Site Area) states “Water in the underground mine will be maintained at an elevation below the Red River in perpetuity.”

Outfalls 004 and 005: Stormwater discharge from 1) a waste rock pile below unlined Goathill Gulch catchments at Outfall 004 and 2) the mine site area at Outfall 005 (located at the mill area) is authorized by USEPA NPDES Permit No. NM022306. Flow measurement installation information (Arcadis Memorandum dated October 1, 2012) describes the flumes installed at the outfalls (see photos #1 and #9). Pre-fabricated fiberglass 9-inch wide Parshall flumes (1.5 foot head) with staff gauge, sitting well, and Solinst Levelogger pressure transducer were installed for Outfalls 004 and 005 (see photos). Arcadis Memorandum dated October 1, 2012 indicates that flume monitoring, sample collection and pressure transducer data downloading would be performed by Arcadis. The impoundment above Outfall 004 did not have a well defined spill way. The flume was located in a channel below the impoundment. Flow to Outfall 005 from the mine site area and portions of the mill area that is collected in a catchment would need to be piped and/or pumped to a constructed channel then Outfall 005. Weirs remained upgradient of the Parshall flumes for Outfalls 004 and 005. There was no discharge from Outfalls 004 and 005 on the day of this CEI.

Status of “New” Outfall 001: Treated mine site area collected water discharged at “new” Outfall 001 is authorized by USEPA NPDES Permit No. NM022306. Conveying waste streams to the tailing facility is to cease and effluent limitations are to be met at “new” Outfall 001 by October 16, 2016 under a compliance schedule in the 2013 USEPA NPDES Permit No. NM0022306. A new water treatment plant (WTP) and “new” Outfall 001 will be located at the mill area. A building had been constructed to house the WTP, but the treatment process works or facilities had not been installed on the day of this CEI. “New” Outfall 001 was not constructed on the day of this CEI. Status of the treatment processes for the WTP is discussed below.

Best Management Practices: Continued operation of existing seepage interception and ground water withdrawal well systems, dewatering the underground mine, piping water to the mill and treating water is a major component of the mine site area Selected Remedy. As described in Footnote 4 of the USEPA ROD 2010 Section 2.3.1.1, seepage-impacted alluvial ground water is collected at the ground water withdrawal well system along the roadside waste rock piles and spring collection systems at Spring 13 and Spring 39. These systems are operated as Best Management Practices under USEPA NPDES Permit No. NM022306. Details of the seepage interception system and ground water withdrawal well system are discussed in more detail below.

### Mill Area

The component of the Selected Remedy for the mill area, as summarized in the USEPA ROD 2010, is soil removal [high concentrations of PCBs greater than 25 milligrams per kilogram (mg/kg)], off-site treatment and disposal (low occupancy-commercial/industrial); regrade, cover, apply amendments, and vegetate after mill decommissioning.

The mill area selected remedy does not include discharges from an outfall authorized by USEPA NPDES Permit No. NM022306. CMI, Questa Building Demolition and Cleanup Plan Phase I Activities Plan transmittal letter dated August 28, 2014 to GWQB and MMD, copied to USEPA Superfund states *“The facilities at the Mill Area that are targeted for decommissioning and demolition as part of the limited Phase I activities will allow for installation of a new utility corridor to support the WTP, facilitate the abandonment and isolation of existing utilities within the Mill Area, and prepare the area for the future construction of a stormwater catchment pond and equalization basin for the WTP, referred to as the expanded 005 Catchment.”* Permittee on-site representatives indicated that the location of Outfall 005, described above, is not expected to change.

### Tailing Facility Area

The component of the Selected Remedy for the tailing facility area, as summarized in the USEPA ROD 2010, is source containment by regrading, cover and revegetation of tailing impoundments; upgrade seepage collection; piping of irrigation water in eastern diversion channel; continue ground water extraction with additional extraction southeast of Dam No. 1; and water treatment.

Status of “Old” Outfall 001: An ion exchange plant was constructed in 1983 to remove molybdenum from decant water below tailing facility Dam No. 4 before discharging the water to the Red River via Pope Creek (holding

pond). Before then, waste water discharges to the Red River were untreated. This discharge was permitted as Outfall 001 under the previous 1993 and 2006 USEPA NPDES Permit No. NM0022306. The ion exchange plant is not operated and there has been no discharge from “old” Outfall 001 in recent years. Discharge from “old” Outfall 001 is not authorized under the current 2013 USEPA NPDES Permit NM0022306. The ion exchange plant and “old” Outfall 001 were not demolished or removed on the day of this CEI.

Outfall 002: Continuous ground water extraction south of the tailing facility discharged at Outfall 002 is authorized by USEPA NPDES Permit No. NM022306. Outfall 002 discharges effluent comprised of a mixture of tailing seepage and contaminated ground water collected by a system of extraction wells and seepage interception drains south of Dam No. 1. An extension of the Outfall 002 system was previously identified as Outfall 003. It consists of an extraction well and two seepage barriers that collect tailing seepage from the eastern flank of the Dam No. 4 impoundment. The extension system discharges into and becomes part of the Outfall 002 discharge. Monitoring and flow meter measurements for Outfall 002 are conducted at a concrete access vault south of the tailing facility. Effluent from this collection system flows via gravity through a pipeline and discharges at the bank of the Red River.

#### Red River and Riparian and South of Tailing Facility Area

The component of the Selected Remedy for the Red River and riparian and south of tailing facility area, as summarized in the USEPA ROD 2010, is removal of soil and tailing spill deposits and on-site disposal. Historic tailing spill removal is being conducted by CMI under an Administrative Settlement Agreement and Order on Consent for Removal Actions, Chevron Questa Mine Superfund Site, Questa, New Mexico, CERCLA Docket dated June 9, 2012.

Red River, riparian, and south of tailing facility area Selected Remedy does not include discharges from an outfall authorized by USEPA NPDES Permit No. NM022306. Performance monitoring for the Red River and riparian and south of tailing facility area Selected Remedy includes physical, chemical and biological monitoring of the Red River to assess effectiveness of response actions at the mine site area on improving Red River surface water quality and protecting aquatic life.

#### Eagle Rock Lake

The component of the Selected Remedy for Eagle Rock Lake, as summarized in USEPA ROD 2010, is inlet storm water controls, and sediment dredging with on-site disposal. The removal of contaminated sediment to a dredged depth of three feet and installation of inlet storm water controls at the headgate will reduce the concentrations of metals in the existing sediment and the rate of sedimentation and metals accumulation from Red River surface water during storm events. These actions will allow the establishment and long-term protection of new benthic macroinvertebrate populations in Eagle Rock Lake sediment.

Eagle Rock Lake Selected Remedy does not include discharges authorized by USEPA NPDES Permit No. NM022306.

#### **Seepage Interception Systems and Ground Water Withdrawal Well System**

Spring 13 and 39 seepage interception systems are designed to collect shallow alluvial seepage. Spring 13 is a seepage zone located along on the north side of the Red River just east of the mouth of Capulin Canyon. Spring 39 is a seepage zone located on the north side of the Red River just east of the mouth of Goathill Gulch. Both seepage areas are where aluminum hydroxide precipitation occurs. Spring 13 seepage interception system is located at the north side waters edge of Red River and Spring 39 seepage interception system is located north of Red River with an overflow channel or area in the floodplain of Red River.

Part II.A of the previous 2006 USEPA NPDES Permit No. NM0022306 described the seepage interception system for Spring 13 as having an approximate pumping rate of 50 gallons per minute (gpm) and for Spring 39 as having an approximate pumping rate of 95 gpm. Revised Final Feasibility Study Report (“FS”), Questa Mine Site, Questa,

NM, CERCLA Docket No. 06-09-01, November 16, 2009, Section 6.1.1.2 (Spring Collection Systems along the Red River) states:

*The two spring collection systems remove metals and other inorganics loads from the shallow alluvial aquifer and reduce the load entering the Red River. The Spring 39 collection system has reduced the aluminum hydroxide precipitates along the northern river bank, whereas, aluminum hydroxide precipitates are still visible along the Spring 13 collection system.*

As described in USEPA ROD 2010, Sections 2.3.1.3, 2.5.1.2, and 2.5.1.3, the seepage interception systems at Spring 13 and Spring 39 and ground water withdrawal well system at the toe of the roadside waste rock piles were installed in 2002 to comply with the prohibition against the discharge to the Red River of pollutants traceable to point source mine operations. Operation of the seepage interception systems began in February 2003. USEPA ROD 2010, Section 2.5.1.2 states:

*They consist of perforated French drains placed approximately 1.5 feet below the low water level of the river. The drains flow via gravity to concrete vaults where the water is pumped through the pipeline to the mill. The French drain at Spring 39 was originally 400 feet long. The system was upgraded in 2005 to include a second drain next to the original drain. The flow from Spring 39 system averages about 80 gpm. The French drain at Spring 13 is approximately 1,000 feet long. The flow from the Spring 13 system averages approximately 20 gpm. The two systems have reduced but not eliminated the load of metals and other inorganic chemicals entering the Red River.*

Periods of shut down for the Spring 13 and 39 seepage interception systems due to maintenance or damage have been reported. For example:

- Copies of record-keeping provided by the Permittee representatives indicated that CMI contacted USEPA Region 6 NPDES Water Enforcement Branch staff by e-mail sent August 21, 2014 to notify of proposed power shut-down anticipated to be approximately 8 hours for maintenance for Spring 13 and 39 Water Collection System.
- Copies of record-keeping provided by the Permittee representatives indicate that CMI contacted USEPA Region 6 NPDES Water Enforcement Branch staff by e-mail sent September 22 and 23, 2014 regarding Spring 13 Water Collection System being offline due to damage repair. On September 22, 2014, a leak originated from a vehicle hitting a clean out stub. Repairs were completed on September 23, 2014.

Photo documentation of observations of the interception system and the Red River on June 17, 2014 by NMED GWQB staff are attached to this report (Attachment B). Observations of the areas evaluated during this CEI are further discussed below.

Ground Water Withdrawal Well System is described in the USEPA ROD 2010 Section 2.5.1.2 as follows:

*In 2002, three ground water withdrawal wells (GWW-1, -2, and -3) were installed just downgradient of the toes of the three Roadside Waste Rock Piles (Sugar Shack South, Middle, and Sulphur Gulch South) to capture potential discharges from point source mine operations through a hydrologic connection below the Sugar Shack waste rock pile.... These wells collect acidic, metals-laden water impacted by acid rock drainage from the waste rock piles and thereby, prevent such water from flowing downgradient and entering into the Red River at zones of upwelling at the Spring 39 area.*

*The wells are designed to extract alluvial ground water along the north side of the Red River at a rate that is approximately two to three times the estimated ground water flux to the Red River alluvial aquifer from the Sulphur Gulch watershed to the Sugar Shack South watershed.... The water pumped from each withdrawal well is a mixture of Red River alluvial ground water and waste rock/scar leachate from the pre-existing drainages north of the river. Average pumping rates for GWW-1, -2 and -3 are approximately 100, 80, and 240 gpm, respectively, with a total pumping rate of 420 gpm.*

Below is a summary of CMI reported average flows in gpm for Spring 13, Spring 39, Portal Spring and other springs at or upgradient of the Red River:

CMI Annual Report Date	Reported Year	Spring 13	Spring 39	Cabin Spring	Portal Spring	Sulphur Gulch Seep
09/30/2010	2010	1	4.8		1.22	0.875
09/06/2011	2011	1	4.72		1.44	1
08/08/2012*	2012	1	3.83		0.42	0.33
09/13/2013	2013	0.6	3.18	0**	0.16	1.07
09/10/2014	2014	0.833	2.3	0.16	0.58	1.02

Notes:

\*Report transmittal date appears incorrect. NMED SWQB files indicate that the report was received in September of 2012.

\*\*Values provided in September 2014 Annual Report.

CMI also submits quarterly reports to NMED GWQB under NMED GWQB DP-1055 that includes, but is not limited to, tabulated ground water gauging and mine site ground water monitoring well sampling results, lab reports, and map showing the monitoring well locations and surface water sampling points, ground water supply wells, and active seep/spring locations; tabulated analytical results of water samples collected from nine surface water locations along the Red River, active springs along the Red River and discrete seeps at the mine site area; estimated flow rates; monthly seep and spring inspection results; analytical results of water samples collected and monthly flow meter readings (volume of water pumped from the underground mine to the mill); potentiometric surface maps for the alluvial and bedrock units associated with the mine site; and Capulin Canyon Water Collection System inspections.

**Status of Water Treatment Plant Treatment Scheme**

The treatment process for the water treatment system including a “shakedown period” for mine dewatering, groundwater withdrawal well system, seepage interception systems at Spring 13 and 39, seepage interception systems at the base of Capulin and Goathill North waste rock piles, and groundwater extraction well systems in lower drainages were described in the USEPA ROD 2010.

CMI submitted a Draft Treatability Study, Evaluation Report Questa Water Treatment Pilot Study, in a transmittal letter dated August 29, 2014, to USEPA Superfund, GWQB, and MMD. Following treatability studies, pilot-scale water treatment studies for the plant have been performed from October 2013 to May 2014. Several testing scenarios were completed to cover the range of expected flows and water composition. The Draft Treatability Study provided draft figures showing conceptual illustrations of the Enhanced Chemical Precipitation + Nanofiltration (ECP + NF) treatment process at this time (Attachment C).

**Areas Evaluated during Inspection**

**Section A - Permit Verification (Addresses Observations) - Overall rating of “Marginal”**

Clean Water Act requirements set forth at 33 U.S.C. § 1311(a) provides that the discharge of a pollutant from a point source to waters of the United States without a permit issued under the Clean Water Act is unlawful.

Part I.B (Compliance Schedules) of the 2013 Permit states “*The Permittee shall comply with...schedule of activities for cessation of waste streams to the tailing facility in order to substantially eliminate unauthorized tailings facility seepage....*” Tailing waste disposal has ceased but other unauthorized wastewater streams (underground mine dewatering and water collection systems) at the tailing facility had not ceased on the day of this CEI. Permit conditions require the Permittee to totally cease conveying mill process wastewater, mine drainage, and captured

groundwater or spring water to tailings facility by October 1, 2016. Further explanation on reporting for the compliance schedule is discussed below in Section B.

Part II.D of the 2013 Permit states *“This permit prohibits the discharge to the Red River of pollutants traceable to point source mine operations except in trace amounts.”* Visible white (described by Permittee on-site representative to be aluminum hydroxide) and red (rusty in color) slimy deposits, possibly iron bacteria, and algal growth mats were observed along the Red River at and downstream of the Spring 13 interception system during this CEI (see photo #4 and #5). Visible white precipitates in areas of surface water in the floodplain of the Red River at the Spring 39 interception system were observed during this CEI (see photo #2). Further explanation on operation and maintenance of the spring interception systems and ground water well collection systems is discussed below in Section C.

### **Comments on Demolition and Cleanup Plan**

Part III.D.9 (Standard Conditions, Other Information) of the permit states:

*Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.*

CMI 2014 Building Demolition and Cleanup Phase I Activities Plan discusses waste streams or sources of pollutants in the mill area, stormwater permitting requirements under the USEPA NPDES Construction General Permit, and storm water control measures. During building demolition and clean up activities, and/or construction of the new WTP, CMI would need to ensure that control measures prevent any new or additional pollutants (i.e., pollutants not identified in the renewal application) that may be discharged at Outfall 005. Any new or additional pollutant facts or information would need to be promptly submitted to USEPA Region 6 NPDES Permit staff.

### **Comments on WTP / Treatability Study**

Part I.D (Effluent Characteristic Analysis for New Discharges, Outfall 001) states:

*Beginning the start-up of the new water treatment and lasting through the expiration date of the permit, the permittee shall collect samples at Outfall 001 once per calendar year, during the period of mill operations, for analysis of effluent characteristics.... Samples shall be taken at least six months apart or longer. The first sample shall be taken within the 30 days of first commencing discharge after the final compliance schedule.*

CMI 2014 Draft Treatability Study did not appear to consider or evaluate all pollutants listed in Part I.D of the 2013 Permit that would be required to be screened upon commencing discharge after the final compliance schedule. CMI can contact NMED SWQB and USEPA Region 6 Permit Section to confirm that the hardness value used in the Treatability Study--a representative hardness of the Red River (123 mg/L) downstream of the treated discharge to calculate applicable hardness based metal water quality standards--would be consistent with procedures used to develop NPDES permit effluent limitations.

## **Section B - Recordkeeping and Reporting Evaluation - Overall rating of “Unsatisfactory”**

### **Permit Requirements**

Part I.B (Compliance Schedules) of the Permit states:

**B. COMPLIANCE SCHEDULES**

The permittee shall comply with the following schedule of activities for cessation of waste streams to the tailings facility in order to substantially eliminate unauthorized tailings facility seepage and comply with effluent limitations established at Outfall 001:

- i. By 90 days from the effective date of the final permit (EDP): Commence engineering designs for cessation of waste streams to the tailings facility;
- ii. By 270 days from the EDP: Commence construction works which may include ground-breaking, start of new pipeline/facility installation, or start of significant modification of existing technology/facility;
- iii. By October 1, 2016: Totally cease conveying mill process wastewater, mine drainage, and captured groundwater or spring water to tailings facility; and
- iv. By October 1, 2016: Comply with the effluent limitations established at Outfall 001.

The permittee shall submit quarterly progress reports in accordance with the following schedule. The requirement to submit quarterly progress reports shall expire when the discharge is in compliance with the effluent limitations.

<u>PROGRESS REPORT DATE</u>	<u>REPORTING PERIOD</u>
January 15	October - December
April 15	January - March
July 15	April - June
October 15	July - September

The quarterly progress reports shall address the progress towards cessation of waste streams to the tailings facility. Reports shall be submitted no later than "Progress Report Date" listed above. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement. Compliance schedule progress reports shall be submitted to EPA and copy to NMED at addresses listed in Part III.D.4 of the permit.

Part I.C of the 2013 Permit states:

*...the permittee shall submit ...all other reports required by Part III.D: to the EPA and other agencies as required. (See Part III.D.4 of the permit.)*

Part III.D.4 (Standard Conditions, DMRs and Other Reports) of the 2013 Permit provides street and post office mailing addresses for USEPA Region 6, Water Enforcement Branch (6EN-W) and NMED SWQB Program Manager, respectively.

Part III.D.8 (Standard Conditions, Reporting, Other Noncompliance) of the Permit states *"The permittee shall report all instances of noncompliance not reported under Parts III.D.4 and D.7 and Part I.B (for industrial permits only) at the time monitoring reports are submitted. The reports shall contain the information listed at Part III.D.7."* Part III.D.7 of the Permit states *"...The report shall contain the following information: (1) A description of the noncompliance and its cause; (2) The period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and, (3) Steps being taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge."*

### **Findings - Compliance Schedule Reports**

Permittee did not submit Compliance Schedule quarterly progress reports that address the progress towards cessation of waste streams to the tailing facility.

Permittee did not submit quarterly progress reports that address the progress towards cessation of waste streams to the tailing facility in accordance with the Compliance Schedule Progress Report Date required in Part I.B (Compliance Schedules) of the Permit. After the effective date of the permit, quarterly progress reports were not submitted, as required, on or before, January 15, 2014; April 15, 2014; July 15, 2014; and October 15, 2014.

Permittee did not submit compliance schedule progress reports that address the progress towards cessation of waste streams to the tailing facility to USEPA with a copy to NMED at addresses listed in Part III.D.4 of the permit.

Permittee on-site representative indicated that statements were placed in the comment section of the electronic Discharge Monitoring Reports (DMRs) or NetDMRs for Outfall 001 (e.g., “No discharge facility has not been built,” “No Discharge,” “Facility has not been constructed,” and “No Discharge, facility has not been built yet, foundation is being constructed”). Statements entered electronically into NetDMR were not submitted to USEPA with a copy to NMED at addresses listed in Part III.D.4 of the permit.

**Findings - Copies to NMED SWQB**

As of January 31, 2014, Permittee representatives did not submit copies of notices or other reports regarding the compliance with the permit that were sent to USEPA NPDES Region 6 Water Enforcement Branch to NMED SWQB. Copies were provided during or following this CEI. The Permittee should confirm that the correct addresses are being used to send written reports to NMED SWQB.

**Findings - Monitoring and Non-Compliance Reporting**

Further explanation for non-compliance reporting for pH, Total Suspended Solids (TSS), Total Cyanide, and Whole Effluent Toxicity (WET) monitoring is discussed below in Sections D and F.

**Section C - Operation and Maintenance Evaluation - Overall rating of “Unsatisfactory”**

**Permit Requirements**

Part II.D (Best Management Practices, Seepage Interception Systems and Ground Water Withdrawal Well) of the 2013 Permit states:

D. Best Management Practices

This permit prohibits the discharge to the Red River of pollutants traceable to point source mine operations except in trace amounts. Implementation of these Best Management Practices (described below) is considered compliance with this prohibition.

The permittee shall maintain and properly operate seepage interception systems to prevent discharges of process related ground water to the Red River at Spring 13 and Spring 39. The permittee shall also properly operate the ground water withdrawal well below the toe of the Sugar Shack South deposit at a location approximately 100 yards southwest of the old mill site.

Spring 13 is defined as the seepage zone located on the north side of the Red River at the southwest base of Goathill, just east of Capulin Canyon.

Spring 39 is defined as the seepage zone located on the north side of the Red River approximately 500 feet east of Goathill Campground.

The permittee shall conduct monthly visual inspections of the Red River and its banks in the vicinity of the facility at the following known historic seeps and springs locations: Goathill Gulch seep, Sulphur Gulch seep, Portal springs, Cabins Springs, Upper Spring 39, Shaft Springs, Spring 39, and Spring 13. Quantitative estimates of flow will be noted and evaluated to identify changes in discharge or seepage trends. Data obtained from monitoring wells located below the mine front waste rock piles may be substituted for visual observation of seeps and springs in that area. A report summarizing the monthly inspections shall be submitted annually. In the event that the quantitative estimate of flow identifies and order of magnitude increase in the average discharge or seepage rates, the observation shall be reported to the Agencies within fourteen days of identification of the change. This fourteen day reporting requirement applies to Portal Spring (below the Sugar Shack deposit in the vicinity of the Old Mill), Spring 13, and Spring 39. This permit may be reopened if any significant discharge or seepage occurs or if it is determined that existing seepage in other locations is hydrologically connected to the mine. Should monitoring required under Part II.A of this permit show that the seepage interception system is In effective or find seepage traceable to point source mine operations, this permit may be modified or revoked and reissued to address those discharges.”

Part III.B.3a (Standard Conditions, Proper Operation and Maintenance) of the Permit states:

*The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by permittee as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants and will achieve compliance with the conditions of this permit....*

**Findings**

USEPA NPDES CEI report signed February 28, 2011 for an inspection on October 26, 2010 states:

*Chevron Mining failed to operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by permittee. The permittee is required to maintain and operate the seepage interception and management system to comply with the prohibition against the discharge to the Red River of pollutants traceable to point source mine operations except in trace amounts. On the day of the inspection, Spring 39 seepage interception system was visibly leaking and discharging to the Red River.... The Spring 39 seepage interception system consist of two french drains which are approximately 300 feet long with an approximate pumping rate of 95 gpm. On the day of the inspection the pumping rate was 6 gpm....*

As discussed above in Section A, the aluminum hydroxide and red slimy deposits, possibly iron bacteria with algal growth mats, were observed along the Red River at and downstream of the Spring 13 and Spring 39 interception system during this CEI.

Reviewed recorded flows for the Spring 13 interception systems for November thru December 2013; January 2014, and March thru June 2014 indicate flow ranged from 3,000 to 13,000 gallons per day (converted to 2.083 to 9.028 gpm).

Reviewed recorded flows for the Spring 39 interception systems for November thru December 2013; January 2014, and March thru June 2014 indicate flow ranged from 42,000 to 97,000 gallons per day (converted to 29.17 to 67.36 gpm).

Reviewed records did not document that the seepage interception system and ground water withdrawal wells were properly operating on days that the flow measurement system did not record flow.

Notes:

Reviewed daily records of pump flows in thousand gallons for the three ground water wells (GWW1, GWW2, GWW3), and Spring 13 and Spring 39 interception systems for November thru December 2013; January 2014, and March thru June 2014 provided during the CEI indicated time periods that flow was not recorded by equipment, but was estimated using the previous recorded daily data. Dates missing or having no recorded flow included:

<b>GWW1</b>	<b>GWW2</b>	<b>GWW3</b>	<b>Spring 13</b>	<b>Spring 39</b>
12/01/2013	12/01/2013	12/01/2013	12/01/2013	12/01/2013
12/02/2013	12/02/2013	12/02/2013	12/02/2013	12/02/2013
12/10/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013
12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013
12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013
			01/22/2014	01/22/2014
			06/07/2014	06/07/2014
06/09 - 06/25/2014	06/09 - 06/27/2014	06/09 - 06/25/2014		
06/30/2014	06/30/2014	06/30/2014	06/30/2014	06/30/2014

Written procedures for seepage interception system operation and maintenance dated prior to September 5, 2014 were requested, but were not provided. Reviewed Daily Tailing Operations Daily Maintenance/Inspection Report (e.g., April 10, 2014) did not include seepage interception system observations. Written procedures (CMI, Questa Mine, Water Collection System Inspection dated September 5, 2014) indicated that the ground water wells, Columbine Pump Station, Spring 13 and 39, Dam 1 Outfall and Pumpback, and Dam 4 Outfall and Pumpback, and tailing pipeline are to be checked during a daily water collection system inspection. CMI provided on October 6, 2014, Water Collection System Inspections daily log reports (records) from 07/14/2014 thru 09/29/14 which indicated flow (gpm) of zero (0) on 9/29/14, 9/28/14, 9/27/14, 9/26/14, 9/25/14 (#1 and #2 GWWs); and 9/28/14, 9/25/14, 9/22/14, 8/1/14 and 7/25/14 (Spring 13).

Written procedures dated September 5, 2014 indicate that flow (gpm), current and sump levels for the ground water wells, Spring 13 and Spring 39 are to be recorded daily. However, reviewed written procedures did not indicate the flows expected for the components of the water collection system.

An open pipe was observed at a culvert downgradient of Outfall 004 and associated impoundments (see photo #8). The purpose of the pipe could not be determined and was unknown by Permittee representatives. No discharge from the pipe was observed during the CEI. Inspection of the pipe outlet after a rain event or collection of water in the upgradient impoundments is needed to confirm that there is no mine discharge. The Permittee should cap or remove the pipe.

**Section D - Self-Monitoring - Overall rating of “Unsatisfactory,” Section F - Laboratory - Overall rating of “Unsatisfactory,” and Section G - Effluent/Receiving Waters - Not Evaluated**

### **Permit Requirements**

Part I.A of the 2013 Permit for Outfall 002 requires an increase in the frequency of pH monitoring of 1/day by grab sample from the previous 2006 Permit which was 1/Week. Part I.A of the Permit for Outfall 002 requires Total Suspended Solids (TSS) monthly (1/mo), Total Cyanide quarterly (1/quarter), and Whole Effluent Toxicity (WET) quarterly (1/3 mo) effluent monitoring with a 24-hour composite sample type.

Part II.F.3.d.iii of the Permit (WET Toxicity Testing, Samples and Composites) states “*Samples shall be chilled to 6 degrees Centigrade during collection....and/or storage.*”

Part III.B.3a (Standard Conditions, Proper Operation and Maintenance) of the Permit states “*Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.*” Part III.C.3 (Standard Conditions) of the Permit states “*The permittee shall retain records of all monitoring information, including all calibration and maintenance records....*” Parts III.C.4 (Standard Conditions, Record Contents) of the permit states:

*Records of monitoring information shall include:*

- a. The date, exact place, and time of sampling or measurements;*
- b. The individual(s) who performed the sampling or measurements;*
- c. The date(s) and time(s) analyses were performed;*
- d. The individual(s) who performed the analyses;*
- e. The analytical techniques or methods used; and*
- f. The results of such analyses.*

Part III.C.5 (Standard Conditions, Monitoring Procedures) of the Permit states:

- a. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit or approved by the Regional Administrator.*

*b. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instruments at intervals frequent enough to insure accuracy of measurements and shall maintain appropriate records of such activities.*

*c. An adequate analytical quality control program, including the analyses of sufficient standards, spikes and duplicate samples to insure the accuracy of all required analytical results shall be maintained by the permittee or designated commercial laboratory.*

## **Findings - pH**

Monitoring for pH was not performed at a frequency, in this case 1/day, specified in the 2013 Permit on reviewed recordkeeping for Outfall 002 for February, March and April 2014.

Method noted for pH monitoring on reviewed recordkeeping for Outfall 002 for February, March and April 2014 was not a USEPA approved analytical method in 40 CFR 136.3.

### Notes:

Sampling and analyses pH data records (CMI pH Meter Calibration and Measurement for Outfall 002 for February, March and April 2014) noted Standard Methods 18<sup>th</sup> Edition, Electrometric Method 4500 H+B, Page 4-68 Procedure 4A & B. Standard Methods 4500 H+B was approved by Standard Methods Committee in 1990 and is no longer approved in 40 CFR § 136.3 effective on June 18, 2012. Table IB (List of Approved Inorganic Test Procedures) in 40 CFR 136.3, effective June 18, 2012, lists the following approved methods for hydrogen ion (pH) monitoring:

- Standard Methods (SM) 4500–H+ B–2000;
- ASTM D1293–99 (A or B);
- 973.41<sup>1</sup>; and
- I-1586–85<sup>2</sup>

- 
- 1) Official Methods of Analysis of the Association of Official Analytical Chemists, Methods Manual, Sixteenth Edition, 4th Revision, 1998. AOAC International.
  - 2) Methods for Analysis of Inorganic Substances in Water and Fluvial Sediments, Techniques of Water-Resource Investigations of the U.S. Geological Survey, Book 5, Chapter A1., unless otherwise stated. 1989. USGS.

Reviewed records for Outfall 002 for February, March and April 2014 did not document that pH analyses met the required holding time, in this case “analyze within 15 minutes,” required in USEPA approved methods (40 CFR 136.3 Table II).

### Notes:

Reviewed pH results for Outfall 002 for February, March and April 2014 did not include both sampling time and analytical time. For example, on February 6, 2014, analysis time and results for two individual pH measurements [1<sup>st</sup> pH Measurement Time 1333 (7.28) and 2<sup>nd</sup> pH Measurement Time 1343 (7.31)] was recorded. The sample collection time was not recorded.

Updated and/or additional information in Permittee written operating procedures for pH instrument calibration and analytical method procedures and on pH data recordkeeping is needed.

### Notes:

- Reviewed pH instrument calibration data documented the use of two buffers (7.0 and 10.0 s.u.). Additional Quality Control data were recorded with the results of sampling and analysis, but this information did not include a third (different) buffer. SM 4500–H+ B–2000 specifies instrument calibration or standardization procedures

using three buffers. The purpose of standardization is to adjust the response of the glass electrode to the instrument.

- Procedures following sample collection SM 4500–H+ B–2000 states “*Establish equilibrium between electrodes and sample by stirring sample to insure homogeneity; stir gently to minimize carbon dioxide entrainment.*”
- Recording the instrument used during monitoring would facilitate a comparison of instrument calibration records to analytical data. Reviewed records indicates that more than one instrument is used for NPDES compliance pH monitoring. Reviewed records for the pH sample collection and analyses did not always identify the instrument used (e.g., CMI pH Meter Calibration and Measurement recordkeeping for Outfall 002 for 2/20/14 at 1054; 3/27/14 at 1:09; and 04/03/14 at 9:20 am; 4/10/14 at 0714). The Permittee may have additional documentation that was not provided for those dates. As an example of the importance to record the instrument, documents for the pH meter calibrations (YSI 556 Calibration Certificate) indicated that meters with serial numbers 09E100426 and 12B100552 failed pH Calibration in July of 2013. NPDES compliance pH sampling and analysis monitoring using those meters, if any, immediately prior to the 2013 calibration date may be suspect.

CMI can contact USEPA netDMR staff if there are questions on how to submit corrected DMRs or additional comments to indicate non-compliance with monitoring requirements of the permit (e.g., invalid results) on DMRs.

### **Findings - TSS**

Method used for TSS monitoring on reviewed recordkeeping for Outfall 002 was not a USEPA approved analytical method in 40 CFR 136.3.

#### Notes:

Commercial or contracted laboratory analytical report for Outfall 002 for February, March and April 2014 indicate that USEPA Method 160.2 was used to analyze TSS. EPA Method 160.2 was withdrawn in March of 2007 (*Federal Register/Vol. 72, No. 47/Monday, March 12, 2007/Rules and Regulations*).

Calculated TSS effluent loadings for Outfall 002 were not reported using daily effluent flow and daily analytical data, and, in this case, using concentrations below detection limits.

#### Notes:

- TSS loading for Outfall 002 was reported as zero (0) on copies of reviewed netDMRs for February, March and April 2014. Part II.A and associated Appendix A (MQLs) of the Permit that allows reporting of 0 under certain conditions does not include TSS (i.e., there is no MQL for TSS in the Permit). Recordkeeping of analytical reports for TSS indicate that samples collected in February, March and April 2014 were not detected at a detection limit of 4 mg/L. An example loading calculation presented below indicates that loading values above 0 would be reportable:

#### Example Calculation:

Flow on day of sampling (MGD) x concentration (mg/L) x 8.34 (lbs/gal) = Loading (lbs/day)

0.306444 million gallons per day (MGD) x < 4 mg/L x 8.34 (lbs/gal) = <10.22297184 or **10 lbs/day**

Where:

Flow on Day of Sampling = CMI Februry 2014\_Daily Flow.txt, Gallons\_Total, Timestamp 2014-02-06 07:00:00” = 306444 gallons per day. 306444 gallons per day x 1 MGD / 1,000,000 gallons per day = 0.306444 MGD

TSS concentration of sample collected between 0830 hrs 2-5-14 thru 0830 hrs 2-6-14 = 4 mg/L qualified with "U." Per commercial laboratory, ALS Environmental report February 24, 2014, "...analyte was analyzed for but not detected a "U" is entered."

- USEPA Region 6, NPDES Reporting Requirements Handbook, Reporting of Loadings, Revised August 25, 2004 states:

*Some parameters in the permit are limited in terms of pounds per day (lbs/day). Although all of these parameters are measured initially in milligrams per liter (mg/L), conversion to lbs/day can be achieved by using the following formula. Always be sure to use the flow measurement determined on the day when sampling was done.*

*Flow on day of sampling (MGD) x concentration (mg/L) x 8.34 (lbs/gal) = Loading (lbs/day)*

- Concerning minimum analytical level (MAL), or in this case, MQL, USEPA Region 6, NPDES Reporting Requirements Handbook, Revised August 25, 2004 states:

*When an analysis of an effluent sample indicates no detectable levels for a parameter not covered by the MAL permit provision, the level of detection achieved must be used for that sample result in determining reportable maximum and average values. A zero (0) may not be used.*

### **Findings - Cooling Preservation (TSS, Cyanide, and WET)**

Sample collection procedures described by Permittee representatives indicated that samples collected for TSS, total cyanide, and WET effluent monitoring from Outfall 002 did not meet cooling preservation specified in the Permit, and USEPA approved methods (40 CFR 136.3 Table II).

#### Notes:

- Sample collection procedures described by Permittee representatives indicated that samples were not refrigerated during 24-hour compositing (sample collection or storage) as required by the Permit.
- Required cooling preservation in 40 CFR 136.3 effective on June 18, 2012, Table II (required containers, preservation techniques, and holding times) for TSS, total cyanide and aquatic toxicity tests is "Cool, to  $\leq 6$  °C." Footnote 2 of 40 CFR § 136.3 states "Except where noted in this Table II and the method for the parameter, preserve each grab sample within 15 minutes of collection. For a composite sample collected with an automated sample (e.g., using a 24-hour composite sample...), refrigerate the sample at  $\leq 6$  °C during collection unless specified otherwise in this Table II or in the method(s)."
- Sample collection procedures described in USEPA Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002, approved method in 40 CFR § 136.3 state:

#### *Section 8.5 Effluent and Receiving Water Sample Handling, Preservation, and Shipping*

*8.5.1 Unless the samples are used in an on-site toxicity test the day of collection (or hand delivered to the testing laboratory for use on the day of collection), it is recommended that they be held at 0-6°C until used to inhibit microbial degradation, chemical transformations, and loss of highly volatile toxic substances.*

*8.5.2 Composite samples should be chilled as they are collected. Grab samples should be chilled immediately following collection.*

Non-compliance with sample preservation requirements in the 2013 Permit and 40 CFR 136.3 Table II was not reported on reviewed WET DMR (TX2-Q) for the first three monitoring periods of the Permit (11/01/2013 to 01/31/2014, 02/01/2014 to 04/30/2014, and 05/01/2014 to 07/31/2014).

CMI submitted an “Application for WET Testing Frequency Reduction” to USEPA dated September 15, 2014. Non-compliance with sample preservation requirements in the 2013 Permit and 40 CFR 136.3 Table II was not reported on the application to reduce frequency.

#### Comment - Quality Control Procedures

Permittee representatives provided copies during this CEI of reports of Permittee’s participation in USEPA’s DMRQA Study, Performance Evaluation which includes testing for pH, TRC and TSS. DMRQA Study 33 and 34 NPDES Performance Evaluation Report results were reported to be acceptable (CMI letter to NMED dated August 8, 2013 and August 7, 2014, respectively). However, methods listed on the Study 33 and 34 report for TRC was HACH 8167 2008, and for pH was EPA 9040B 2 1995; and Study 33 report for TSS was EPA 160.2 which are not approved methods listed in 40 CFR § 136.3 for NPDES application or monitoring purposes.

#### Comment - Section G - Effluent - Not Evaluated

As discussed above, Outfall 002 effluent sampling and analyses for TSS, Total Cyanide, WET, and pH was not conducted and/or not documented to meet USEPA approved methods and permit requirements. Therefore, reported Outfall 002 effluent monitoring by the Permittee could not be evaluated.

### **Section E - Flow Measurement - Overall rating of “Marginal”**

#### **Permit Requirements**

Part I.A of the 2013 Permit requires continuous flow measurement record for Outfall 002. Part I.A of the 2013 Permit requires flow measurement 1/day with a sample type of “*measure by weir*” for Outfalls 004 and 005.

Part III.C.6 (Standard Conditions, Flow Measurements) of the Permit states:

*Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10% from true discharge rates throughout the range of expected discharge volumes.*

#### **Findings - Flow Measurement**

Documentation that flow meters were calibrated after 2008 according to the Permittee written procedures dated April 8, 2014 was not provided. Written flow measurement calibration procedures dated prior to April 8, 2014 were not provided.

#### Outfall 002 Meter Notes:

Written procedures for Outfall 002 flow meter replacement and calibration (CMI Questa Mine, NPDES permit #NM0022306, Flow Meter Calibration Program dated April 8, 2014) indicated that calibrations would be conducted ever two years. A test certificate for a flow meter indicating “good results” was dated November 25, 2008. Calibration records after 2008 were not provided during or following this CEI.

## Comments - Permit Verification - Flow Measurement

CMI can contact USEPA Region 6 Permit Section to notify of change or addition of flow measurement devices installed at Outfalls 004 and 005.

### Outfalls 004 and 005 Flume Notes:

As discussed above, Arcadis Memorandum dated October 1, 2012 that was provided by the Permittee on-site representative following this CEI on September 29, 2014 included installation information and initial calibration check information. Written procedures for operation and maintenance for the open channel flumes at Outfalls 004 and 005 (e.g., periodic horizontal and vertical surface levels or settling checks, periodic calibration, expected flows, required approach flow conditions, etc.) were not provided during or following this CEI. Outfalls 004 and 005 have not discharged under the 2006 or 2013 Permits. CMI's Amended Renewal Application dated December 21, 2012 EPA Form 2C did not provide average flows expected at Outfall 004 and Outfall 005. Arcadis Memorandum information did not provide information on the expected flows should a discharge occur. ISCO Open Channel Flow Measurement Handbook, Sixth Edition, Table 13-5 Discharge Table indicates that the maximum flow measured with a 9" Parshall Flume with 1.5 head in feet is 2,564 gpm (3.689 MGD).

Since there was no discharge at the Outfalls 004 and 005 measurement and monitoring location, it is unknown if the weirs left in place may affect the approach flow into the flumes and possible flow measurements. For example, ISCO Open Channel Flow Measurement Handbook, Sixth Edition, Page 66 states "To assure accurate discharge measurement, the approach flow conditions should be considered" and "large rocks and other debris in the flow may cause problems."

CMI can contact USEPA Region 6 Permit Section to discuss if a flow measurement type of estimate, instead of weirs,—not subject to accuracy requirements of Part III.C.6 of the permit—would be appropriate at Outfalls 004 and 005.

<b>NMED/SWQB</b> <b>Official Photograph Log</b> <b>Photo # 1</b>		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1240 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine, Mill Area - Monitoring and Measurement Location for Outfall 005		
Subject: Looking south-southeast, arrows point to weir and flume at monitoring and measurement location for Outfall 005. Weir was upgradient of the flume for Outfall 005. A channel for flow was not well defined in this area.		



<b>NMED/SWQB</b> <b>Official Photograph Log</b> <b>Photo # 2</b>		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1402 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine, Spring 39 Seepage Interception System Area		
Subject: Visible white precipitate and surface water at Spring 39 Seepage Interception System. Arrow points to PVC pipe for interception system.		



NMED/SWQB Official Photograph Log Photo # 3		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1429 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine, Spring 13 Seepage Interception System Area, Along north bank of Red River		
Subject: PVC pipes used for maintenance cleanout of Spring 13 Seepage Interception System as described by Permittee on-site representative.		



NMED/SWQB Official Photograph Log Photo # 4		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1429 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine, Adjacent to Spring 13 Seepage Interception System Area, Along bank of Red River		
Subject: Arrows point to examples of visible white precipitate in Red River.		



<b>NMED/SWQB          Official Photograph Log          Photo # 5</b>		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1431 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine, Downstream of Spring 13 Seepage Interception System Area		
Subject: Example of red (rusty in color) slimy deposits, possibly iron bacteria at seep along bank of Red River. Green algal growth mat at seep may be from increased nutrients (nitrogen and phosphorus).		



<b>NMED/SWQB          Official Photograph Log          Photo # 6</b>		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1432 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine, Spring 13 Seepage Interception System Area, Along bank of Red River		
Subject: PVC pipe used for clean out of Spring 13 Seepage Interception System described by Permittee on-site representative.		



<b>NMED/SWQB          Official Photograph Log          Photo # 7</b>		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1434 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine, Downstream of Spring 13 Seepage Interception System Area.		
Subject: Looking downstream at Red River		



<b>NMED/SWQB          Official Photograph Log          Photo # 8</b>		
Photographer: Erin S. Trujillo	Date: 09/23/2014	Time: 1514 hours
City/County: East of Questa / Taos County		State: New Mexico
Location: CMI Questa Mine - Downgradient of Monitoring and Measurement Location for Outfall 004		
Subject: Looking south, arrow points to pipe at culvert downgradient of impoundment above Outfall 004. No discharge from pipe was observed during CEI.		



NMED/SWQB  
Official Photograph Log  
Photo # 9

Photographer: Erin S. Trujillo

Date: 09/23/2014

Time: 1515 hours

City/County: East of Questa / Taos County

State: New Mexico

Location: CMI Questa Mine - Monitoring and Measurement Location for Outfall 004

Subject: Looking south-southeast, arrow points to weir in the shallow channel upgradient of flume in background of photo at monitoring and measurement location for Outfall 004.



## **Attachments**

### **Attachment A**

E-mail requests prior to and after CEI for recordkeeping.

### **Attachment B**

NMED GWQB Red River Observations on June 17, 2014

### **Attachment C**

Selected figures from CMI Draft Treatability Study, Evaluation Report Questa Water Treatment Pilot Study, August 29, 2014

## **Attachment A**

E-mail requests prior to and after CEI for recordkeeping.

**From:** Trujillo, Erin S, NMENV  
**To:** "[Schoenbacher, Jeffery](#)"; [Martinez, Armando \(amarti@chevron.com\)](mailto:amarti@chevron.com)  
**Subject:** RE: NPDES CEI, NM0022306, Chevron Mining, Inc., Questa Mine, 09-23-14 Tues and 09-24-14 Wed, Preliminary List of Records  
**Date:** Monday, September 29, 2014 5:47:54 PM

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Jeff and Armando,

I really appreciate you taking time today to follow up.

Below I added more details/examples.

Let me know if the following information (equivalent/similar) is readily available and send copy.

Request copies:

- Drawing/schematic (s) for Sump 5000 that shows location and identifies inlet and outlet pipes and/or drains, if any
  - Written procedures (e.g., inspection, operation and maintenance, emergency) of CMI Water Collection System prior to September 5, 2014, if any
  - Completed inspection, operation, maintenance records from April 1, 2013 (previous CEI) thru September 24, 2014 (this CEI) for Spring 13/39 portion of water collection system, if any
  - Completed record keeping for "annual" clean out of Spring 13/39 portion of water collection system (last clean out was indicated to be August 2014), if any
  - Documentation of Spring 13/39 portion of collection system (e.g., detailed narrative, drawings, schematics, plans & specs, as built, etc.)
  - Print out of daily flow measurements (Kgals) that includes Spring 13 and 39 pumps/portion of collection system w/monthly totals and estimates indicated in red (if any) for February 2014
  - Additional supporting flow measurement or operation information for Spring 13 and 39 pumps/portion of collection system for November 2013 thru September 24, 2014
  - All other reporting to EPA (should have been copied to NMED)—not DMRs and not annual inspection report—for example, non-compliance, spill reporting, or other by mail after September 21, 2011 and e-mail after 05/25/2012, if available
- Note: NMED did not receive attachments for CMI letter to EPA dated September 15, 2014 regarding application for WET testing frequency reduction
- Other written procedures/documents, not already provided, related to effluent monitoring/laboratory for NPDES permit compliance (see highlighted below)
- Note: Screen prints of database information was discussed today
- Documentation/results for last flow meter (Outfall 002) calibration/checks (see highlighted below)

If received on or before October 13, then I will try to review for consideration in report.

Give me a call if you want to discuss. If the information is available, but you need more time, then

give me a call to discuss before October 13.

Thanks, Erin

Erin S. Trujillo  
New Mexico Environment Department  
Surface Water Quality Bureau, Room N2050  
Point Source Regulation Section, Industrial Team  
P.O. Box 5469 - 1190 St. Francis Dr, Santa Fe, NM 87505  
Santa Fe, New Mexico 87502 – 5469

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erin.trujillo@state.nm.us

For Surface Water Quality Bureau Information, see [www.nmenv.state.nm.us/swqb](http://www.nmenv.state.nm.us/swqb).

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**From:** Schoenbacher, Jeffery [<mailto:JSchoenbacher@chevron.com>]  
**Sent:** Monday, September 22, 2014 1:48 PM  
**To:** Trujillo, Erin S, NMENV  
**Cc:** Holcomb, Sarah, NMENV; Valenta, Daniel, NMENV; Gabaldon, Sandra, NMENV  
**Subject:** RE: NPDES CEI, NM0022306, Chevron Mining, Inc., Questa Mine, 09-23-14 Tues and 09-24-14 Wed, Preliminary List of Records

Thanks. This will help to compile the information before your arrival to facilitate the audit.

See you tomorrow.

Jeff Schoenbacher

---

**From:** Trujillo, Erin S, NMENV [<mailto:erin.trujillo@state.nm.us>]  
**Sent:** Monday, September 22, 2014 11:26 AM  
**To:** Schoenbacher, Jeffery  
**Cc:** Holcomb, Sarah, NMENV; Valenta, Daniel, NMENV; Gabaldon, Sandra, NMENV  
**Subject:** RE: NPDES CEI, NM0022306, Chevron Mining, Inc., Questa Mine, 09-23-14 Tues and 09-24-14 Wed, Preliminary List of Records

Jeff Schoenbacher, 575-586-7537:

Jeff,

Below is a preliminary and example list of the types of records/written documents I'll be asking about. I also put down the dates or timeframes of the documents I'd like to review and/or obtain copies. We'll discuss tomorrow if there are questions. Thanks, Erin

-Plant, Operations and Maintenance Records for:

1) September 2013;  
st

- 2) 1 after November 1, 2013, and
- 3) Last Completed

General Records:

- \_Plant schedules, dates of equipment maintenance and repair?
- \_Standby power or other equivalent?
- \_Alarm system for power or equipment failures?
- \_Spare parts and supplies inventory maintained?
- \_Operation and maintenance manual?
- \_Standard operating procedures and schedules?
- \_Procedures for emergency treatment control?
- \_Bypasses/overflows?

Also, for Questa Mine:

- \_Spring 13/39 Seepage Zone Seepage Interception system O&M records?
- \_Sugar Shack South Deposit GW withdrawal system (100 yards SW of Old Mill Site) O&M Records?
- \_Outfalls 004 and 005 Inspection Logs?
- \_Tailing Pipeline O&M
  - \_Monthly Red River Visual Inspections, including quantitative estimates of flow?
  - \_Red River Visual Inspection Annual Report for 2013?
- \_Tailing Spills?

-Flow Measurement Records:

- \_Installation (Meter, Totalizers, Recorders, Etc.)?
- \_SOP/Manual?
  - \_Calibration?**
  - \_Checks?**

-Written Quality Control Procedures:

- \_SOPs/Sample Collection Procedures (Refrigeration, Preservation, Containers, Holding Times)?**
  - \_Methods (analysis on site)?**
  - \_Duplicates/Spikes?**
  - \_Chain of Custody?**
  - \_Other?**
  - \_**

-Laboratory Equipment Calibration and Maintenance Records?

-Supporting Record Keeping for DMRs:

- 1) 2<sup>nd</sup> of the 1/quarter or February 1st thru April 30th, 2014 DMRs; and
- 2) April 2014 Monthly DMRs

- \_Flow?
  - \_Field/Analysis On-site Lab Bench Sheets?
  - \_Commercial Lab Reports?
  - \_Composite Sample Collection Record Keeping?
    - \_Effluent Loading Calculations?
    - \_Analytical Data?

\_WET?  
\_Other?

-NetDMR

\_Discuss EPA reports that indicate DMRs “not received”

-Compliance Schedule Reporting

Erin S. Trujillo  
New Mexico Environment Department  
Surface Water Quality Bureau, Room N2050  
Point Source Regulation Section, Industrial Team  
P.O. Box 5469 - 1190 St. Francis Dr, Santa Fe, NM 87505  
Santa Fe, New Mexico 87502 – 5469

505-827-0418, Fax 505-827-0160  
[erin.trujillo@state.nm.us](mailto:erin.trujillo@state.nm.us)

For Surface Water Quality Bureau Information, see [www.nmenv.state.nm.us/swqb](http://www.nmenv.state.nm.us/swqb).

## **Attachment B**

NMED GWQB Red River Observations on June 17, 2014

**From:** [Maurer, Anne, NMENV](#)  
**To:** [Trujillo, Erin S. NMENV](#); [Holcomb, Sarah, NMENV](#)  
**Cc:** [Fox, Joseph, NMENV](#)  
**Subject:** Spring 13 and 39 GPS Locations with Photos  
**Date:** Friday, June 20, 2014 12:52:46 PM  
**Attachments:** [Photo Inspection Report - Spring 13 and 39 Photos.pdf](#)  
[2014-06-17 GPS Waypoints Spring13 39 Site Inspection.xlsx](#)

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Erin and Sarah,

Attached is a spreadsheet with the lat/longs of the waypoints I took during my Spring 13 and 39 inspection on June 17, 2014. I also included photos that correspond to the waypoints.

Let me know if you have any questions/comments and thanks for letting me borrow your GPS unit!

Cheers,

Anne Maurer  
M.S. Groundwater Engineering  
Mining Environmental Compliance Section  
Ground Water Quality Bureau  
New Mexico Environment Department  
1190 St. Francis Dr.  
Santa Fe, NM 87501  
(O) 505.827.2906  
(C) 970.946.9730

**GPS Locations of Spring 13 and 39**  
**GWQB Site Inspection 6/17/2014**

Location Identifier	Lat	Long	Date and Time	Elevation (m)	Associated Photos	Notes
Spring13REDE	36.6847	-105.533	6/17/2014 12:56	2367.594727	Photos 21 - 24	Photo 24 was taken approx. 100 ft. upgradient of Photos 21-23; taken upstream of Spring 13
Spring13EEND	36.68487	-105.533	6/17/2014 12:53	2366.873779	Photo 20	Taken at the east terminus of Spring 13
Spring13WEND	36.68494	-105.534	6/17/2014 12:48	2364.710693	Photo 16 - 19	Photos 17 - 19 were taken slightly upgradient of Photo 16; taken at the west terminus of Spring 13
Spring13REDW	36.68493	-105.534	6/17/2014 12:45	2370.718994	Photos 11 - 15	Taken downstream of the west terminus of Spring 13
Spring39EEND	36.69605	-105.549	6/17/2014 12:28	2321.932373	Photo 10	Taken at the east terminus of Spring 39
Spring39RDE	36.69576	-105.549	6/17/2014 12:25	2332.266602	Photos 7 - 9	Taken upstream of the east terminus of Spring 39
Spring39DS	36.69813	-105.551	6/17/2014 12:10	2322.893555	Photo 6	Taken downstream of the west terminus of Spring 39
Spring39REDW	36.69796	-105.551	6/17/2014 12:06	2319.529053	Photos 2 - 5	Taken downstream of the west terminus of Spring 39
Spring39WEND	36.69818	-105.55	6/17/2014 12:02	2317.125732	Photo 1	Taken at the west terminus of Spring 39



Photo 1. Spring 39 West End Clean-outs



Photo 2. Downstream of Spring 39 – looking upstream



Photo 3. Downstream of Spring 39 – looking downstream



Photo 4. Downstream of Spring 39 – Note milky discharge



Photo 5. Downstream of Spring 39 – looking upstream



Photo 6. Further Downstream of Spring 39 – looking downstream



Photo 7. Upstream of Spring 39 – looking downstream



Photo 8. Upstream of Spring 39 – looking upstream



Photo 9. Upstream of Spring 39



Photo 10. Spring 39 East End Clean-Outs



Photo 11. Downstream of Spring 13



Photo 12. Downstream of Spring 13



Photo 13. Downstream of Spring 13 – narrow channel with iron staining



Photo 14. Downstream of Spring 13 – narrow channel with iron staining



Photo 15. Downstream of Spring 13 – looking east towards west end of Spring 13



Photo 16. Spring 13 West End Clean-Outs



Photo 17. Spring 13 looking downgradient towards west end clean-outs



Photo 18. Spring 13 looking upgradient



Photo 19. Spring 13 at western end



Photo 20. Spring 13 East End Clean-Outs



Photo 21. Upstream of Spring 13 - looking downstream



Photo 22. Upstream of Spring 13 – looking upstream



Photo 23. Upstream of Spring 13 – some iron staining on river bank



Photo 24. Further Upstream of Spring 13 – looking upstream

## **Attachment C**

Selected figures from CMI Draft Treatability Study, Evaluation Report Questa Water Treatment Pilot Study, August 29, 2014



Figure 9-1

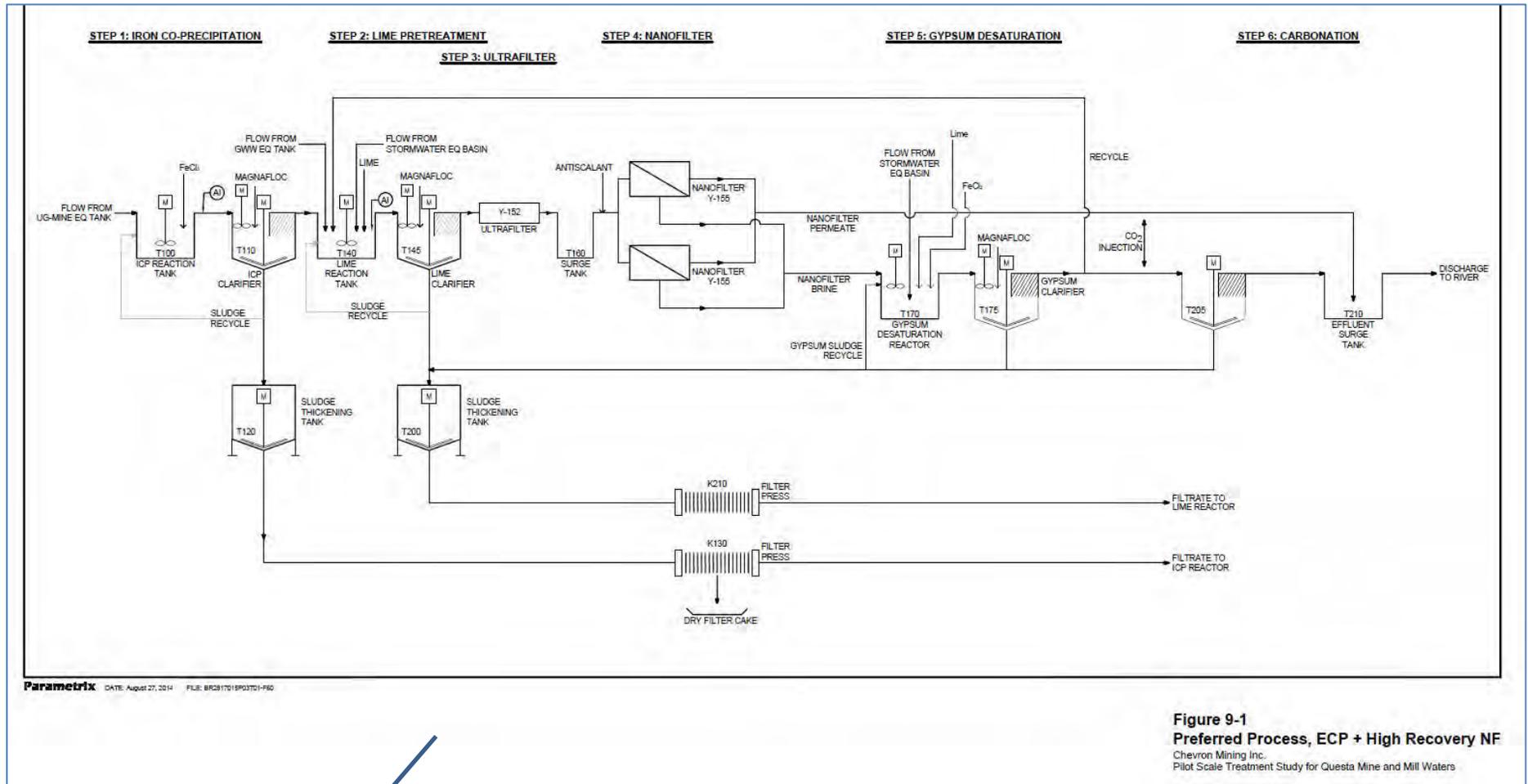


Figure 9-1  
Preferred Process, ECP + High Recovery NF  
Chevron Mining Inc.  
Pilot Scale Treatment Study for Questa Mine and Mill Waters

Draft

**Permittee Response dated December 22, 2014**



**Phil Howard**  
General Mine Manager

**Questa Mine**  
Chevron Mining Inc.  
P.O. Box 469  
Questa, NM 87556  
Tel (575) 586-7521  
Fax (575) 586-0811  
Phillip.howard@chevron.com

December 22, 2014

Mr. Bruce Yurdin, Program Manager  
Point Source Regulation Section  
Surface Water Quality Bureau  
Resource Protection Division  
New Mexico Environment Department  
P.O. Box 5469  
Santa Fe, NM 87502-5469

**FED Express**



**Re: Chevron Mining Inc. – Questa Mine – NPDES NM0022306  
Response to Compliance Evaluation Inspection Report  
Dated November 24, 2014**

Dear Mr. Yurdin:

Chevron Mining Inc. (CMI) has received and reviewed the Compliance Evaluation Inspection Report and cover letter dated November 24, 2014, for the inspection conducted by Erin Trujillo and Sarah Holcomb.

This letter is CMI's response to the items noted, including where appropriate, compliance schedules for CMI's actions to address those items. The structure of this submittal is to respond to the "Further Explanations" section of the inspection and supply additional information.

### **SECTION A- PERMIT VERIFICATION**

#### **NMED Comment:**

#### ***Demolition and Clean-up Plan***

***CMI 2014 Building Demolition and Cleanup Phase I Activities Plan discusses waste streams or sources of pollutants in the mill area, stormwater permitting requirements under the USEPA NPDES Construction General Permit, and storm water control measures. During building demolition and clean-up***

***activities, and/or construction of the new WTP, CMI would need to ensure that control measures prevent any new or additional pollutants (i.e., pollutants not identified in the renewal application) that may be discharged at Outfall 005. Any new or additional pollutant facts or information would need to be promptly submitted to USEPA Region 6 NPDES Permit staff.***

CMI Response:

CMI, in accordance with the NPDES Multi-Sector Permit, requires contractors to implement storm water control measures to prevent any new or additional pollutants that may be discharged at Outfall 005. In addition, prior to any demolition activity the contractor performing any demolition work in these areas is required to submit a Notice of Intent (NOI) to EPA for a Storm Water Construction General Permit and subsequent compliance.

**NMED Comment:**

***WTP / Treatability Study***

CMI Response:

CMI appreciates the comments. However, CMI notes that those comments are not related to compliance with the current permit, and therefore, do not need to be addressed in this response. Regardless, CMI is providing clarification here to aid in the understanding of the process. CMI agrees that the full list of pollutants listed in Part I.D of the 2013 Permit, which would be required to be screened upon commencing discharge, was not tested for in the pilot study. The parameters not addressed in the pilot study are not expected to be present in the effluent. CMI will test for these parameters, as required, after the treatment plant is operational.

CMI notes that the hardness used to calculate the hardness-based water quality criteria (123 mg/L) is representative of the actual river hardness upstream of the new water treatment plant. While the water treatment plant effluent hardness was not measured in the treatability study directly, it was measured in the WET tests conducted on the pilot effluent and is expected to be higher than the hardness of the river. While it is unclear how much higher, any increase in river hardness downstream of the outfall would result in less stringent water

quality criteria. Therefore, the use of the 123 mg/L hardness in the treatability study is likely to be more conservative. If those hardness-based limits are met, it is likely that less stringent limits based on downstream hardness would also be met.

## **Section B – RECORDKEEPING AND REPORTING EVALUATION**

### **NMED Finding:**

***Permittee did not submit Compliance Schedule quarterly progress reports that address the progress towards cessation of waste streams to the tailing facility. Permittee did not submit quarterly progress reports that address the progress towards cessation of waste streams to the tailing facility in accordance with the Compliance Schedule Progress Report Date required in Part I.B (Compliance Schedules) of the Permit. After the effective date of the permit, quarterly progress reports were not submitted, as required, on or before, January 15, 2014; April 15, 2014; July 15, 2014; and October 15, 2014. Permittee did not submit compliance schedule progress reports that address the progress towards cessation of waste streams to the tailing facility to USEPA with a copy to NMED at addresses listed in Part III.D.4 of the permit.***

### **CMI Response:**

CMI acknowledges that it did not submit quarterly reports addressing progress towards cessation of waste streams. CMI notes that it has included updates in the monthly DMRs for Outfall 001, with the intent that when Outfall 001 became active additional information would be documented in the quarterly reports. Nonetheless, CMI will submit reports for January 15, April 15, July 15 and October 15 summarizing the progress towards cessation of discharges of waste at the Tailing Facility. The compilation of this information will be submitted to USEPA with a copy to NMED at the addresses listed in Part III.D.4 of the Permit by January 15, 2015.

**SECTION C – OPERATION AND MAINTENANCE EVALUATION**

**NMED Finding:**

***Records did not document that the GW withdrawal wells were operating properly on days that the flow measurement system did not record flow.***

<b>GWW1</b>	<b>GWW2</b>	<b>GWW3</b>	<b>Spring 13</b>	<b>Spring 39</b>
12/01/2013	12/01/2013	12/01/2013	12/01/2013	12/01/2013
12/02/2013	12/02/2013	12/02/2013	12/02/2013	12/02/2013
12/10/2013	12/10/2013	12/10/2013	12/10/2013	12/10/2013
12/11/2013	12/11/2013	12/11/2013	12/11/2013	12/11/2013
12/12/2013	12/12/2013	12/12/2013	12/12/2013	12/12/2013
			01/22/2014	01/22/2014
			06/07/2014	06/07/2014
06/09 - 06/25/2014	06/09 - 06/27/2014	06/09 - 06/25/2014		
06/30/2014	06/30/2014	06/30/2014	06/30/2014	06/30/2014

**CMI Response:**

December 1 and 2 of 2013: This data gap was related to the annual maintenance of Spring 13 and 39 water collection systems (WCS). For the WCS maintenance to be conducted, the power is shut-down and a notification email was sent on November 19, 2013 to Jan Walker (USEPA), Joseph Marcoline (NMED), and Anne Maurer (NMED). At the conclusion of this maintenance activity, a follow up email was sent on December 6, 2014 notifying the same distribution list that the cleaning was complete. A copy of this email was submitted to Ms. Trujillo on October 2, 2014 within the supplemental information and was titled 1/02/13 – “WCS Spring 13 and 39 down notice to USEPA”.

December 10, 11, & 12, 2013: Flows were recorded for the 10<sup>th</sup>; however, due to communication faults with the server, data was not collected.

For the Spring 13 and 39, WCS flows were recorded for January 21, 22, and 23 as well as for June 30, 2014:

<b>Date Time:</b>	<b>Spring 13 Flow Total</b>	<b>Spring 13 Runtime</b>	<b>Spring 39 Flow Total</b>	<b>Spring 39 Runtime</b>
01/21/14	11,000	1440	92,000	1440
1/22/14	11,000	1440	91,000	1440
1/23/14	11,000	1440	91,000	1440
06/30/14	11,000	1440	75,000	1440
06/07/14	11,000	1440	75,000	1440

Lastly, concerning the ground water extraction wells identified as GWW1, GWW2, and GWW3. The data gaps identified from June 9 to the 27, 2014 were related to a power fault that interrupted power to the wells. This happened during the time period of the mine shut-down, which went un-noticed because of the mine closure and resultant personnel layoff. However, flows were recorded for June 9 and the GWWs were brought back on-line June 30, 2014.

In an email dated December 4, 2014, Erin Trujillo provided notification to Armando Martinez and Jeff Schoenbacher, that she was amending the report. Specifically the inspection daily log reports from 7/14/14 through 9/29/14, which indicated that the GWW1, 2, and 3 recorded a flow rate of zero (0) 9/29/14, 9/28/14, 9/27/14, 9/26/14, 9/25/14 (#1 and #2 GWWs) and 9/28/14 9/25/14, 9/22/14, 8/1/14 and 7/25/14 (Spring 13).

Regarding the GWW wells, prior to the shut-down these systems were monitored and operated by staff, who would review the operating status and power the pumps in the event the pump was not operating. The GWW wells operate in an automatic start sequence when the water level reaches a specific elevation; the pump is set to turn on. The reference inspection records also document zero (0) for pump amperage indicating that the pumps were not running at the time of the inspection. This is because the water level in the well had not activated the automatic start sequence. Work orders have been written to research the condition of the automatic start sequence and adjust accordingly.

The existence of data gaps should not be correlated with the functionality of the seepage interception systems. Periodically, communication to the instruments fails and requires trouble shooting, and in some cases repair. To avoid these types of faults with the server, they are updated with manufacturer's patches and are kept current. Additionally, information was provided to Ms. Trujillo on October 2, 2014 in the supplemental information package that further describes Spring 13 and 39 WCS monitoring. This information included a computer display screen shot that depicted the daily monitoring that is conducted in the control room. When the user is reviewing Spring 13 and 39 WCS status, the pump status can be shown in the following categories:

- 1.) When a pump is running it is depicted in GREEN;
- 2.) When it is off but able to start it will be YELLOW;

3.) And when the pump is in fault it is displayed in RED.

Furthermore, when the systems have gone down, incidents have been duly reported to both the USEPA and NMED via email (emails submitted to Ms. Trujillo on October 2, 2014), and there have not been any identified impacts to the receiving waters (the Red River) as a result of these incidents.

**NMED Finding:**

***Written procedures for the seepage interception system were requested but not provided***

**CMI Response:**

Written Standard Operating Procedures, dated September 5, 2014, were provided at the time of inspection and in the October 2, 2014 submittal. The PDF document provided to Ms. Trujillo is a file created from the original SOP that retains a May 29, 2012 "date created" document validation. In the event you would like the original MSWord document that depicts the created time stamp, the original document can be provided upon request to validate its existence before September 5, 2014.

**NMED Finding:**

***The Daily Tailing Operations Records did not include seepage interception system observations as specified in the Written procedures (CMI, Questa Mine, Water Collection System Inspection dated September 5, 2014)***

**CMI Response:**

These supplemental records were provided to NMED with a letter dated October 2, 2014. That submittal included a CD containing an indexed MSAccess application, and under the theme "Inspections, Maintenance, Flows" contained a PDF titled "Water Collection System Inspections". That PDF represented the daily maintenance inspections, which includes the seepage interception system for Spring 13 and 39. It is depicted in that PDF document as the third table from the top.

Pumps, Vaults, Pipelines, and Ground Water Wells							
	Spring 13	Pipeline Between 13 & 39	Spring 39	Pipeline Between 39 and Col. Pump Station	#1 GWW	#2 GWW	#3 GWW
Flow (GPM)	8		49		0	0	80-1
Sump Level %	0%		32%		7908	7906	7796
Amps	6.62A		8.95A		0.00A	0.00A	0.00A
Pressure Gauge	100		10		65	85	35
Comments:	Spring 13 is about 40% full of water.						

Additionally depicted on the same inspection forms submitted October 2, 2014 is the following information:

- Ground water wells:** Identified in the third table of the inspection form as #1 GWW, #2 GWW, #3 GWW.
- Columbine Pump Station:** Identified in the fourth table of the inspection form as Columbine Pump Station.
- Spring 13 and 39:** Identified in the third table of the inspection form as Spring 13 and 39.
- Dam 1 Outfall Pumpback:** Identified in the fifth table of the inspection form Tailings Pump Back Station.
- Tailing pipeline:** Identified in the third table of the inspection form as Pipeline Between 13 & 39, Pipeline Between 39 and Col Pump Station.

**NMED Finding:**

***Written procedures do not include expected flows or clean out procedures***

**CMI Response:**

The flows are reviewed daily and in the event of a decrease in efficiency, the occurrence is investigated. Regarding the actual written procedures for the annual cleanout and maintenance, this information is documented in the Spring 13 and 39 WCS SOP Section 4 "Procedures". Lastly, as previously stated the WCS are monitored on a daily basis in the control room and operational alarms can be discovered within the instrumentation control room.

**NMED Finding:**

***Open pipe at culvert downgradient of Outfall 004***

**CMI Response:**

During the inspection, NMED representatives took note of the dormant, non-functional pipe segment down gradient from Outfall 004. The pipe is approximately 5' long and had a screen on the uphill side of the segment and is a dead end pipe, which was demonstrated during the inspection. The screen is covered with dirt, and therefore water does not enter the pipe. The pipe has always been there, contrary to Ms. Trujillo stating that it was "unknown". Nonetheless, the historic purpose of the pipe segment is unknown. CMI removed the pipe on December 3, 2014.

**SECTION D – F SELF MONITORING; LABORATORY; EFFLUENT/  
RECEIVING WATERS**

**NMED Finding:**

***Incorrect monitoring frequency for pH***

**CMI Response:**

As of November 25, 2014 the pH monitoring frequency at Outfall 002 has changed to daily.

**NMED Finding:**

***Incorrect pH method***

**CMI Response:**

CMI has been consistently measuring pH using a USEPA approved method in 40 CFR 136.3 Table II. The technicians have access to the following three YSI 556 instruments that comply with EPA approved Standard Method 4500-H+B-2000:

Serial Number 09E100422

Serial Number 09E100426

Serial Number 12B100552

All YSI Instruments used by staff are EPA approved methods used by YSI; in this instance, for pH Standard Method 4500-H+B-2000. Unfortunately, the method was not updated in the Outfall 002 Sampling SOP and the pH field sheet when the change to the pH probes was originally made; making it appear CMI had been using an incorrect method. The update has been made to the Outfall 002 Sampling SOP (Attachment 1 Section 9.1 page 10) and removed from the revised pH field bench sheet (Attachment 2 – pH Field Sheet).

**NMED Finding:**

***Sample collection time not recorded for pH making it appear analysis not conducted within hold time***

**CMI Response:**

CMI has been analyzing pH within the required 15 minute. While the field sheet does not indicate a "time sampled", the pH monitoring of Outfall 002 is sampled at the time of collection, by turning on a hydrant that is connected to a sump that is installed within a vertical confined space where the outfall resides. As depicted on the field sheet as "1<sup>st</sup> pH Measurement Time," the time is depicted for the first measurement that includes the work flow of filling the YSI cup and analyzing that sample.

The second sample is the same work flow and is analyzed at the time of collection, after waiting 15 minutes before taking the second sample; the holding time during each sample event is minimal since the sample is drawn directly from the outfall into the YSI cup. Regarding the "written operating" procedure, page 10 of the Outfall 002 Sampling SOP (Attachment 1 Section 9.1 page 10) makes it apparent that both pH measurements are recorded within 15 minutes of the sample being collected. Nevertheless, the field bench sheets have been updated to include a "time sampled" parameter to ensure this information is explicit for all future measurements (Attachment 2 – pH Field Sheet).

**NMED Finding:**

***Incorrect number of buffers for pH calibration***

CMI Response:

The current calibration practice, defined in the Outfall 002 Sampling SOP, is compliant with Standard Methods. CMI calibrates the YSI probe used for pH measurement following the required instrument manual calibration instructions as required by Standard Method 4500-H+ B-2000. Section 4.a of Standard Method 4500-H+ B-2000 under instrument calibration states: "In each case follow manufacturer's instructions for pH meter and for storage and preparation of electrodes for use". Based on CMI's samples, a two point calibration is sufficient. YSI model # 556 operations manual states: "Use this option if the media being monitored is known to be either basic or acidic. For example, if the pH of a pond is known to vary between 5.5 and 7, a two-point calibration with pH 7 and pH 4 buffers is sufficient. A three point calibration with an additional pH 10 buffer will not increase the accuracy of this measurement since the pH is not within this higher range." Samples at Outfall 002 typically fall within 7.0 and 10.0, making this a valid calibration.

**NMED Note:**

***Statement regarding pH sample mixing***

CMI Response:

CMI has properly stirred all samples during analysis, but has added wording to page 10 of the Outfall 002 Sampling SOP (Attachment 1 Section 9.1 page 10) to clarify that all samples are stirred.

**NMED Note:**

***Records for pH do not always identify which probe was used***

CMI Response:

CMI records the serial number for the probe that was used in the comments section on the field pH bench sheet. Under rare circumstances, this step has been overlooked. Technicians have been reminded to include the serial number on every sheet, and the data sheets will be reviewed weekly for completeness.

**NMED Note:**

***pH data collected before a failed calibration may be suspect***

**CMI Response:**

The technicians have access to the following three YSI 556 instruments:

Serial Number 09E100422

Serial Number 09E100426

Serial Number 12B100552

As a standard operating procedure, in the event that any of the units fail to calibrate, the unit is not used and is sent back to the manufacturer for factory calibration. Two factory certified calibrated YSI's are available as back-ups in the event the initial meter fails calibration. The readings that have been procured to date would only be suspect if the calibration was ignored when the unit fails, which is not the case. The YSI go through at least one and sometimes two factory calibrations per year to make sure they are in working order. The factory calibration certifications for these instruments were provided to NMED in the supplemental information response dated October 2, 2014.

**NMED Finding:**

***TSS method is not a USEPA approved analytical method***

**CMI Response:**

The TSS SOP is compliant with both 160.2 and SM 2540D. However, all future ALS Laboratory reports will reference SM 2540 D, instead of the EPA160.2. In addition, the results reported for all of 2014 are also compliant with Method 2540D, even though method 160.2 is cited on the reports. A copy of the ALS SOP can be provided upon request.

**NMED Finding:**

***TSS loads incorrectly recorded when below detection limits***

**CMI Response:**

CMI was unaware that the allowance for reporting zero only applied to those parameters with MQLs. The loading calculation will be carried out using the full method detection limit with the results reported as "<calculated loading" for all future DMR reports. Additionally, revised DMR reports will be submitted for 2014.

**NMED Finding:**

***Composite samples not cooled immediately after collection***

**CMI Response:**

This issue has been corrected and the technicians have been instructed that when sampling the outfalls the sample needs to be placed in an iced cooler and taken back to the environmental calibration room for refrigeration. The refrigerator is set at 4 degree C. Furthermore, the Sampling SOP (Attachment 1 various sections) has been updated to reflect this change and field sheets have been modified in a manner that documents the refrigeration temperature for each sample, to validate the date, time, technician and temperature.

**SECTION E – FLOW MEASUREMENT**

**NMED Finding:**

***Flow meter calibration not conducted at frequency described in documentation***

**CMI Response:**

The YOKOGAWA flow meter installed at Outfall 002 came with a factory test certificate, which certifies the unit is calibrated and is in working order. The flow meter for Outfall 002 and the auxiliary components are installed in a high safety risk vertical confined space that has limited access.

Nonetheless, a flow meter calibration program was developed for the flow meter in Outfall 002. The strategy behind the program was to swap the existing unit out from the outfall pipe and replace it with an "in kind" flow meter that is currently in stock as a back-up.

**NMED Finding:**

***Concern surrounding potential for incorrect flow measurement at Outfalls 004 and 005***

**CMI Response:**

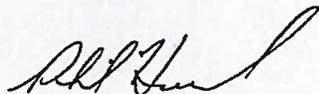
The Parshall flumes immediately downstream of the Outfall 004 and 005 metal weirs are not part of the NPDES Permit. The metal weirs are the NPDES Permit flow devices, not the flumes.

The flumes were installed as part of the Eagle Rock Lake Removal Action, as a requirement of the Statement of Work for Removal Actions in Attachment A of the U.S. Environmental Protection Agency Administrative Order on Consent for the Chevron Questa Mine Superfund Site (USEPA 2012, CERCLA Docket No. 06-09-12). Information on the flumes is provided in the Eagle Rock Lake Removal Action Work Plan (Work Plan), Sections 3.3 and 3.4 and Appendix D (ARCADIS 2012). The flume locations, design, and monitoring were approved by USEPA and NMED. CMI provided documents to NMED shortly after the inspection, describing the flume installations and additional information is available in the Work Plan. Information on expected flows at the flumes, should discharge occur, was not a requirement of the Removal Action. However, information on the design flow capacity of the flumes is provided in the Work Plan.

The CEI states that the weirs may affect the approach flow into the flumes and flow measurements required in Part I.A of the Permit. Because the flumes are not part of the NPDES, this requirement does not apply to the flumes. In the event the Work Plan would like to be reviewed, a copy of the plan can be provided upon request.

Thank you for your consideration in this matter and should you have any questions or require additional information regarding this report, please contact Jeff Schoenbacher at (575) 586-7537.

Sincerely,



Phil Howard

Enc: Attachment 1 - Outfall 002 Sampling SOP, Attachment 2 pH Field Sheet

cc: Carol Peters Wagon, USEPA  
Gladys Gooden-Jackson, USEPA  
Isaac Chen, USEPA  
Gary Baumgarten, USEPA  
Anne Mauer, NMED GWQB  
Erin Trujillo, NMED SWQB  
Joseph C. Fox, NMED GWQB  
Michael Coats, CEMC  
Armando Martinez, CEMC  
Jeff Schoenbacher, CEMC

**Attachment 1**



## **Chevron Mining - Questa Mine**

### **Outfall 002 Sampling**

**Prepared by: Cassandra Padilla, Environmental Technician  
Alex Arellano, Environmental Technician  
Burnell Jones, Environmental Specialist**

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## SECTION 1.0 PURPOSE AND GOALS

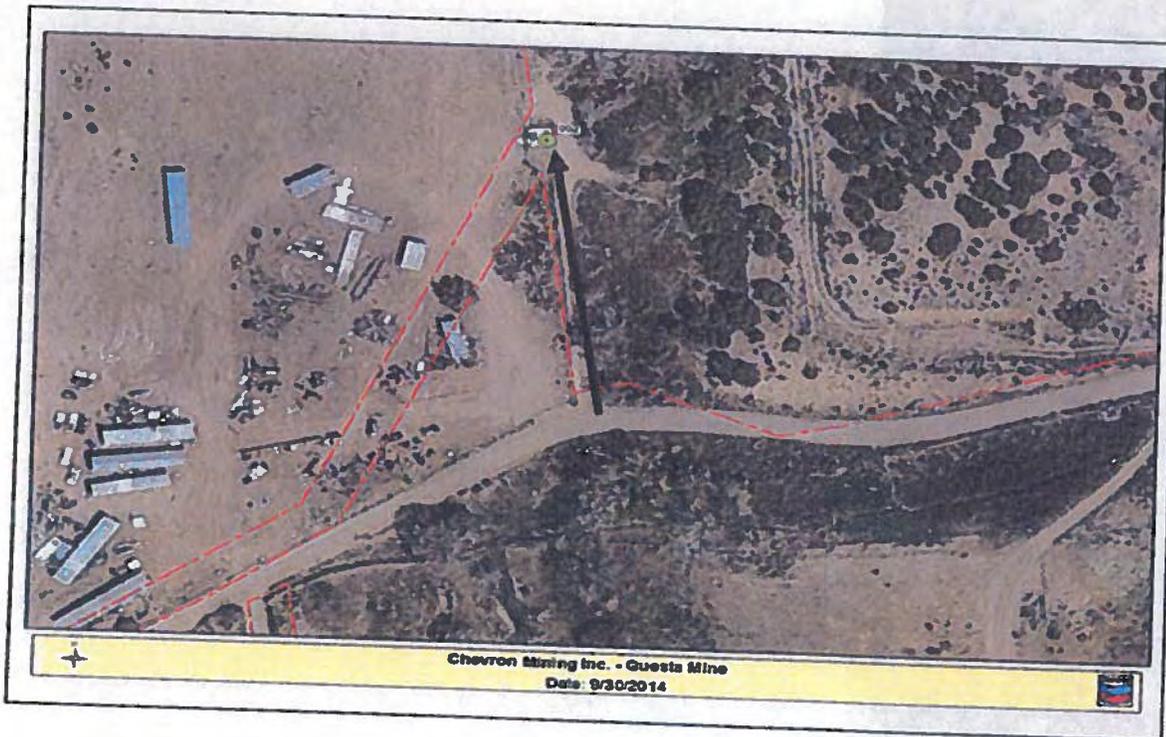
The purpose of this standard operating procedure (SOP) is to describe the procedures for the sampling methods used at Outfall 002. These sampling methods are conducted to comply with requirements stated within the NPDES Permit NM0022306. The sampling methods discussed in this SOP are:

- Daily pH Monitoring
- 24hr Composite- Monthly
- 24hr Composite- Quarterly
- 24hr Composite- Annual
- Toxicity WET Test

Also discussed in the SOP is the calibration of YSI meter, as well as the flow monthly downloads from Outfall 002.

## SECTION 2.0 OUTFALL 0002 LOCATION

The location of Outfall 002 is located at the bottom of tailing dam 4 and north side of Lower Embargo Rd. The outfall has three security measures: the tailing facility south gate, the fence surrounding the outfall and finally the combination lock on the access door for the outfall. Below in Figure 1 is a map which shows the location of Outfall 002 and Figure 2 is a picture of Outfall 002.



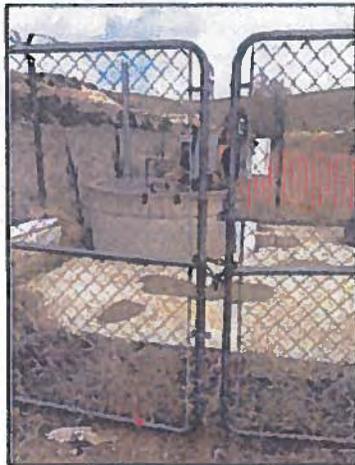
### ***Section 2.1 Outfall 002 Access***

The tailing's south gate combination is 9111 and the fence surrounding the outfall has a key lock; the key can be obtained from the Environmental Technicians. Lastly, the combination for the access door is 2000.

### ***Section 2.2 Radio Procedures***

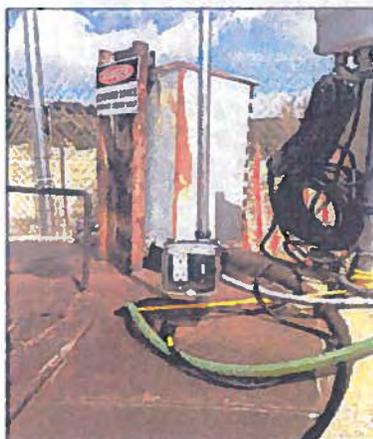
When on the tailing facility property, contractors or operators in the nearby vicinity must be notified by radio.

### ***Section 2.2 Photo of Outfall 002***



### ***Section 2.3 Power Source***

Outfall 002 is equipped with a submerged pump that is used to bring the sample up from the outfall, which is situated within a confined space. The pump has a cord that is plugged in, which then activates the pump.



## Section 2.4 Sample Volume

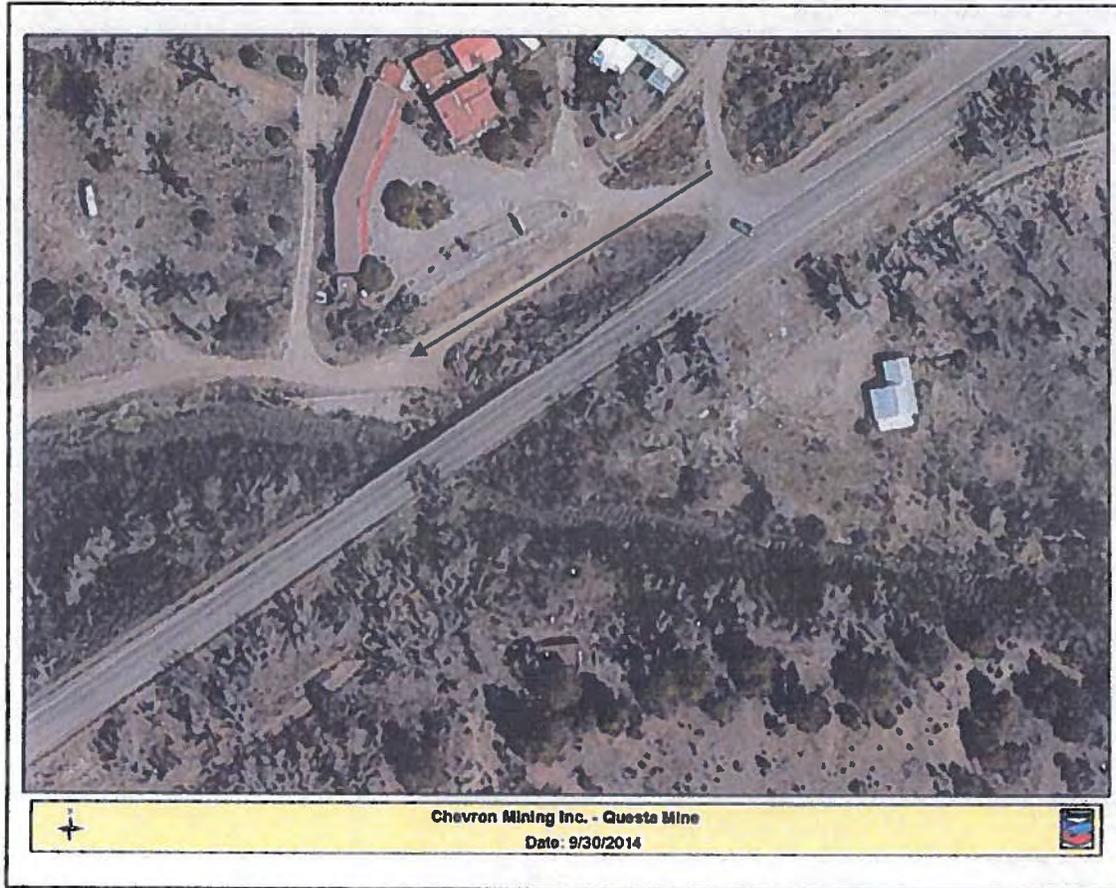
In order to determine the amount of sample volume that is dependent on the volume of water required by lab. The amount of water that it takes to fill up the required sample bottles depends on the labs used and also depends on the test required. Specifically, the following procedures are done during every sampling event.

1. Collect the GPM from this meter to determine the volume required. Example: (175GPM x Factor = the volume in Liters) (175 GPM x 16= 2800 ML which is almost 3 liters.)
2. A graduated cylinder is used to measure the exact volume.
3. The same calculation is used each time and factors in the fluctuation of the GPM changing constantly which is taken into account for the calculation.
4. The GPM is taken at the Yokogawa flow display which is pictured below.



## SECTION 3.0 WET TESTING RECEIVING WATERS

The receiving water sampling location is located directly off of High Way 522 South end of Questa and the following depict the location.



The receiving water is sampled only once and is to be shipped out with Cooler #1 that contains the first 24 HR composite for the week and the WET testing samples. The receiving water sample container is a (1.0QT) non-preserved cube container. Or a 1 liter none preserved bottle if cube is unavailable. Refer to section 4.0 composite and bottles.

## SECTION 4.0 NPDES PERMITTED SAMPLING SCHEDULE

These sampling methods have different frequencies in which they are used the following is the schedule of Outfall 002.

### *002 Annual Schedule*

Daily pH: Lower Limit 6.6 and Upper Limit 8.8

Monthly: Total Metals and TSS

Quarterly: Aluminum and Cyanide

Annual: Dissolved Uranium

DMRs due monthly before the 15th of the first month, and following the end of each quarter.

*1st Quarter Sample - Monitoring November 1 January 31*

Aluminum/Cyanide/Ceriodaphnia dubia/Pimephales promelas

*2nd Quarter - Monitoring February 1 April 30*

Aluminum/Cyanide/Ceriodaphnia dubia/Pimephales promelas

*3rd Quarter - Monitoring May 1 - July 31*

Aluminum/Cyanide/Ceriodaphnia dubia/Pimephales promelas

*Seep and Water Collection Report Due 10/1*

*4th Quarter - Monitoring August 1 - October 31*

Aluminum/Cyanide/Ceriodaphnia dubia/Pimephales promelas

## 5.0 SECTION PROPER CONTAINERS

The NPDES Permit states for specific bottles and containers to be used to collect and ship the samples. The following is the proper containers for each sampling event.

NPDES Bottle Specifications For Outfall Sampling							
ALS Life Sciences Division   Environmental 225 Commerce Drive Fort Collins, CO 80524 1 970 490 1511 X241 Julie Ellingson				GEI Consultants, Inc. / Ecological Division 4601 DTC BLVD., SUITE L100 Denver, CO 80237 303 662-0100 Natalie Love			
Outfall:	Units:	Analyte:	Bottle Type:	Preservative:	Size:	Laboratory:	Comments:
<b>001 24 Hour Monthly</b>							
	1	TSS	Poly	<input type="checkbox"/> No Preservative	1 liter	ALS Laboratory Group	
	1	Mercury	PFTE/Glass	<input type="checkbox"/> No Preservative	500 ml	ALS Laboratory Group	
	1	Total Metals	Poly	<input checked="" type="checkbox"/> Nitric Acid	500 ml	ALS Laboratory Group	
<b>Total Number of Bottles:</b>		<b>3</b>					
<b>001_002 Quarterly Wet Testing</b>							
	1	Third Cooler Wet Test	Poly Cube	<input type="checkbox"/> No Preservative	1 Gallon	GEI Consultants, Inc./Ecological Division	Chronic Ceriodaphnia and Pimephales Prometas
	1	Second Cooler Wet Test	Poly Cube	<input type="checkbox"/> No Preservative	1 Gallon	GEI Consultants, Inc./Ecological Division	Chronic Ceriodaphnia and Pimephales Prometas
	1	First Cooler Wet Test	Poly	<input type="checkbox"/> No Preservative	1 Gallon	GEI Consultants, Inc./Ecological Division	Chronic Ceriodaphnia and Pimephales Prometas
	1	First Cooler Wet Test	Poly	<input type="checkbox"/> No Preservative	1 Quart	GEI Consultants, Inc./Ecological Division	Chronic Ceriodaphnia and Pimephales Prometas
<b>Total Number of Bottles:</b>		<b>4</b>					
<b>002 24 Hour Monthly</b>							
	1	Mercury	PFTE/Glass	<input type="checkbox"/> No Preservative	500 ml	ALS Laboratory Group	
	1	Total Metals	Poly	<input checked="" type="checkbox"/> Nitric Acid	500 ml	ALS Laboratory Group	
	1	Flouride/TSS	Poly	<input type="checkbox"/> No Preservative	1 liter	ALS Laboratory Group	

Outfall:	Units:	Analyte:	Bottle Type:	Preservative:	Size:	Laboratory:	Comments:
<b>Total Number of Bottles: 3</b>							
<b>002 24 Hour Monthly and Quarterly</b>							
	2	Total Cyanide	Poly	<input checked="" type="checkbox"/> Hydroxide Preserve	125 ml	ALS Laboratory Group	
	2	Mercury	PFTE/Glass	<input type="checkbox"/> No Preservative	500 ml	ALS Laboratory Group	
	2	Total Metals	Poly	<input checked="" type="checkbox"/> Nitric Acid	500 ml	ALS Laboratory Group	
	2	Fluoride/TSS	Poly	<input type="checkbox"/> No Preservative	1 liter	ALS Laboratory Group	
<b>Total Number of Bottles: 8</b>							
<b>002 Annual Uranium</b>							
	1	Uranium	Poly	<input checked="" type="checkbox"/> Nitric Acid	500 ml	ALS Laboratory Group	
<b>Total Number of Bottles: 1</b>							

Tuesday, September 30, 2014

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## **SECTION 6.0 EQUIPMENT LIST**

The following is the equipment needed for the sampling Outfall 002.

- Shipping forms
- Sample containers
- Ziploc bags
- Ice
- Cooler
- Custody seals
- Gloves
- Preserved bottles as needed
- Log book
- Tape and pen
- Chain of custody
- Field record forms
- Keys and combinations for access through 4 security measures

## **SECTION 7.0 STORAGE OF COMPOSITE SAMPLES**

Samples of all composites are immediately placed in a cooler with ice. Individual grab samples to be composited are taken on ice to the laboratory and stored in a refrigerator at 4°C. The refrigerator that is used to store all compliance samples is an American Biotech 49 Cu. Ft. refrigerator that is equipped with a mechanical thermostat, which provides a constant digital reading that is recorded each time a sample enters the unit.

After the final grab sample is collected, samples are composited and stored in the refrigerator behind a locked door before being shipped.

Items in stored in cabinet at Outfall 002 include the following:

- Graduated cylinder
- Pen
- Calculator
- Filed forms
- Gloves
- Flashlight

## **SECTION 8.0 CALIBRATION PROCEDURE FOR YSI METER**

Procedure For pH YSI Meter Calibration & QA/QC Measurements for Outfall 002

YSI meter is calibrated in the "Calibration Room". The combination to get into the room is 5045. The room is located in the medical wing of the administration building, room number 161. Outfall 002 Folder Is Located in the First Drawer of designated record keeping filing cabinet. Calibration of YSI meter, each meter must have been calibrated from outside contractor within the past year before taking out into the field.

1. Press Green Circle Button-  To Turn On
2. Rinse Cup and Probes With Distilled Water
3. Rinse Cup and Probes With Buffer Solution 7.0
4. Fill Cup Half Ways With Buffer Solution 7.0
5. Let Temperature Stabilize
6. Write On Calibration Sheet Temperature
7. On Bottle Buffer Solution Label Under Calculated pH Is The Recheck pH. Write On Calibration Sheet Recheck pH Buffer Solution.
8. Press Esc- 
9. Under Main Menu High Light Calibrate
10. Press Select 
11. Under Calibrate High Light pH
12. Press Select 
13. Under pH Calibration High Light 2 Point
14. Press Select 
15. Enter 1<sup>st</sup> pH Of Recheck Buffer Solution 7.0-Example-7.02
16. Press Select  Twice
17. YSI Meter Will Appear Calibrated/Continue
18. Toss Away Buffer Solution 7.0
19. Repeat Steps 2-7 With Buffer Solution 10.0. After Done With Step 7 Continue With Step 20.
20. Press Select 
21. Enter 2<sup>nd</sup> pH Of Recheck Buffer Solution 10.0-Example-10.04
22. Press Select  Twice
23. YSI Meter Will Appear Calibrated/Continue
24. Toss Away Buffer Solution 10.0
25. Rinse Cup and Probes With Distilled Water
26. Rinse Cup and Probes with Q/C pH lab certified Reference Material. Q/C pH Reference Material Is In The Fridge.
27. Fill Cup Half Ways With Q/C pH Reference Material
28. Let pH Stabilize
29. Q/C Check Sample# On Calibration Sheet Is The Lot NO. On The Q/C pH Reference Material Bottle
30. Q/C True Value On Calibration Sheet Is The TV On The Q/C pH Reference Material Bottle
31. Advisory Range For Q/C On Calibration Sheet Is The Range On The Q/C pH Reference Material Bottle
32. Write On Calibration Sheet pH Value Found. Value Found Is The pH # On YSI Meter. pH # On YSI Meter Needs To Be Between The Advisory Range.
33. Toss Away Q/C pH Reference Material

34. Rinse Cup and Probes With Buffer Solution 4.0
35. Fill Cup Half Ways With Buffer Solution 4.0
36. Press Green Circle Button-  To Turn Off

\*All YSI meters complete an annual factory calibration conducted by an outside contractor to ensure the units are in working order. In the event, a probe does not calibrate the unit is sent to the contractor for calibration. **Under no circumstances are un-calibrated YSI's used in any type of compliance sampling at Questa Mine.**

## SECTION 9.0 STEP BY STEP PROCEDURES

### *Section 9.1 Daily pH monitoring by Standard Method 4500-HB-2000*

1. Complete and review JSA before entering the field.
2. Calibrate YSI meter for pH buffer solution 7.00, pH buffer solution 10.00 and QA/QC reference material refer to section 6.0.
3. Collect GPM's from Outfall-002 flow tube meter.
4. Use dedicated submersible pump from Outfall-002 pump, which is allowed to run for approximately 5 seconds before collecting sample.
5. Rinse YSI cup and probes with Outfall-002 water.
6. Record the time the sample is collected on the bench sheet. All measurements must be recorded within 15 minutes of the sample collection time.
7. Let Outfall-002 water stabilize. Gently stir the sample and record first pH reading.
8. Wait approximately 10 minutes and then rinse YSI cup and probes with Outfall-002 water. Let Outfall-002 water stabilize then gently stir the sample to get second reading.
9. Rinse YSI meter and probes with distilled water and store YSI cup half way with pH buffer solution 4.00.
10. Open lid to outfall.
11. Inspect all equipment and make sure all is operating and no debris is floating on the water surface. The sample is carried out between Noon-1pm every Thursday for consistency.

### *Section 9.2 24hr Composite- Monthly*

1. Complete and review JSA.
2. Collect tools required.
  - Dedicated container
  - Field form
  - Keys
  - Cooler with ice.
3. Take equipment to the outfall 002 and begin the composite.
4. Determine the time the composite will start.
5. After the time has been determined, the tech must be able to collect all three samples

- of the composite the determined time.
- a. The preferred start time is 7:00am
  - b. Example: Day 1 start time 0700, then in the evening, collect another sample at 1900.  
The last sample will be collected the following morning at 0700.
6. Use the flow meter that is mounted to the outfall and see what the GPM are.
    - a. You will need to repeat this step for every time a sample is collected.
    - b. Record GPM on the field form.
  7. Use a factor of 10, this factor you will multiply with the GPM for each sample of the composite.
    - a. This determines the volume to place into the composite container to ensure enough water is being collected to fill the required sample bottles once composite is complete.
  8. Before collecting the samples, put on nitrile or vinyl sampling gloves to prevent from contaminating the samples.
  9. Also inspect equipment. Make sure nothing is present that could contaminate the sample.
  10. Use the green hose to collect the water from the outfall 002.
    - a. This hose is connected to a dedicated submersible pump.
  11. Plug the submersible pump into the outlet located near the outfall.
  12. Turn switch to "On" to start pump and allow to run for approximately 5 seconds.
  13. Use the dedicated graduated cylinder to measure out the correct volume of water that has been found once you multiplied the factor with the GPM's
    - a. Example: Factor  $10 \times 180 \text{GPM} = 1,800$ . The dedicated cylinder measures up to 1 liter. These 1,800 milliliters is (1) liter of water plus 800 milliliters which equals 1,800. The cylinder is a graduated cylinder for aid in measurements.
  14. Each time a sample is added to the 24HR composite container you must record each GPM on the 24hr Composite Monthly form.
  15. Place the composite sample immediately on ice in cooler and bring back to the laboratory for storage in refrigerator at 4°C.
  16. Poured composite sample into the necessary bottles. Refer to Section 5.0 for type of bottle to use.
    - a. Wear sampling gloves to fill the bottles as well.
    - b. Label each bottle and refer to section 5.0 to determine which analyte to test.
  17. Fill in the rest of the required info on the label and place a piece of clear tape over labels and place samples in their individual bags.
  18. Fill out chain of custody (C.O.C)
    - a. Refer to previous months C.O.C
    - b. This is a way to avoid error and make sure the tests are consistent and the same.
    - c. Check the following analyte to be tested:
      - i. Mercury
      - ii. Total Metals
      - iii. Fluoride/TSS

19. Prepare to ship out sample cooler.

- a. Select cooler and line the inside of cooler with 55gallon clean unused trash bag.
- b. Place samples and plenty of ice to ensure a tight fit to avoid samples being damaged in shipping.
- c. Close trash bag and tie it.
- d. Place a shipping seal over the tied bag to show lab bag has not been tampered with once it left the shippers hands.
- e. Place the C.O.C on the inside of the cooler lid and close lid.
- f. Use strapping tape to secure entire cooler from opening while in route to the lab.
- g. Print out Fed Ex shipping bill and place on top of cooler.
  - i. Cooler is shipped to *ALS Laboratory Group*
- h. Leave for Fed Ex to pick up or take cooler to a fed ex pick up location.

20. File all records in the designated area as back up.

***Section 9.3 24hr Composite- Monthly & Quarterly***

The 24hr Composite for monthly and quarterly will have the same procedure as the 24hr monthly. The samples are duplicated. i.e. two sets of samples are sent to the lab. Also total cyanide is added to the analytes to be tested.

1. Complete and review JSA.
2. Collect tools required.
  - a. Dedicated container
  - b. Field form
  - c. Keys
  - d. Cooler with ice.
3. Take equipment to the outfall 002 and begin the composite.
4. Determine the time the composite will start along with what time the three samples will be collected.
5. Once time has been determined, the tech must be able to collect all three samples at the determined time.
  - a. The preferred start time is 7:00am
  - b. Example: Day 1 start time 0700, then in the evening, collect another sample at 1900. The last sample will be collected the following morning at 0700.
6. Use the flow meter that is mounted to the outfall and see what the GPM are.
  - a. You will need to repeat this step for every time a sample is collected.
  - b. Record GPM on the field form.
7. Use a factor of 10, this factor you will multiply with the GPM for each sample collected for the composite.
  - a. This determines the volume to place into the composite container to ensure enough water is being collected to fill the required sample bottles once composite is complete.

8. Before collecting the samples, put on nitrile or vinyl sampling gloves to prevent from contaminating the samples.
9. Also inspect equipment. Make sure nothing is present that could contaminate the sample.
10. Use the green hose to collect the water from the outfall 002.
  - a. This hose is connected to a dedicated submersible pump.
11. Plug the submersible pump into the outlet located near the outfall.
12. Turn switch to "On" to start pump and run for approximately 5 seconds.
13. Use the dedicated graduated cylinder to measure out the correct volume of water that has been found once you multiplied the factor with the GPM's
  - a. Example: Factor  $10 \times 180 \text{GPM} = 1,800$ . The dedicated cylinder measures up to 1 liter. These 1,800 milliliters is (1) liter of water plus 800 milliliters which equals 1,800. The cylinder is marked with measurements.
14. Each time a cut has been added to the 24HR composite container you must record each GPM on the 24hr Composite Monthly/Quarterly form.
15. Place the composite sample immediately on ice in cooler and bring back to the laboratory for storage in refrigerator at 4°C. Poured into the necessary bottles. Refer to Section 5.0 for type of bottle to use.
  - a. Wear sampling gloves to fill the bottles as well.
  - b. Label each bottle.
16. Fill in the rest of the required info on the label and place a piece of clear tape over labels and place samples in their individual bags.
17. Fill out chain of custody (C.O.C)
  - a. Refer to previous months C.O.C
  - b. This is a way to avoid error and make sure the tests are consistent and the same.
  - c. Check the following analyte to be tested:
    - i. Total Cyanide
    - ii. Mercury
    - iii. Total Metals
    - iv. Fluoride/TSS
18. Prepare to ship out sample cooler.
  - a. Select cooler and line the inside of cooler with 55gallon clean unused trash bag.
  - b. Place samples and plenty of ice to ensure a tight fit to avoid samples being damaged in shipping.
  - c. Close trash bag and tie it.
  - d. Place a shipping seal over the tied bag to show lab bag has not been tampered with once it left the shippers hands.
  - e. Place the C.O.C on the inside of the cooler lid and close lid.
  - f. Use strapping tape to secure entire cooler from opening while in route to the lab.
  - g. Print out Fed Ex shipping bill and place on top of cooler.

- i. Cooler is shipped to *ALS Laboratory Group*
  - h. Leave for Fed Ex to pick up or take cooler to a fed ex pick up location.
19. File all records in the designated area as back up.

#### ***Section 9.4 24hr Composite Annual***

While preparing the shipment for the 24hr Composite Monthly & Quarterly for the 1<sup>st</sup> quarter (Nov. 1<sup>st</sup>- Jan 31<sup>st</sup>), include the uranium sample and testing with the shipment.

- Collection procedure is identical to 24hr Composite Monthly & Quarterly.
- Collect more water than usual to account for needed uranium testing.
- When preparing shipment, in addition to the other bottles, pour composite sample into a 500mL nitric preserved poly sample bottle.
  - The 500mL is the required container to place sample into when having laboratory test for Uranium.
- Place 500mL into cooler.
- Check “Uranium” section on C.O.C before shipping.

#### ***Section 9.5 Toxicity WET Test***

The toxicity WET test is the replication of (3) 24 hr composite in a week time including the collection of the receiving water which is shipped out with cooler #1. Refer to section 2.0 for specific location. Refer to section 14.0 to obtain the sampling techniques required.

- Cooler #1 begin Sunday- Ends and shipped out Monday,
    - Along with composite sample is the receiving water container.
  - Cooler #2 Begins Tuesday-Ends and shipped out Wednesday
  - Cooler #3 Begins Thursday-Ends and shipped out Friday.
    - Must attached Saturday delivery stickers from fed-ex all over cooler.
1. Complete and review JSA.
  2. Collect tools required.
    - a. Dedicated container
    - b. Field form
    - c. Keys
    - d. Cooler with ice.
  3. Take equipment to the outfall 002 and begin the composite.
  4. Determine the time the composite will start.
  5. Once time has been determined, the tech must be able to collect all three cuts of the composite the same time.
    - a. The preferred start time is 7:00am
    - b. Example: Day 1 start time 0700, then the same day the evening cut 1900 the following morning 0700. Day 2 & Day 3 the same way.
  6. Use the flow meter that is mounted to the outfall and see what the GPM are.
    - a. You will need to repeat this step for every cut you take and record GPM on

the field form.

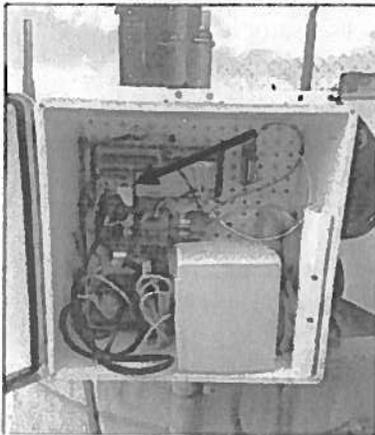
7. Use a factor of 10, this factor you will multiply with the GPM for each cut of the composite.
  - a. This determines the volume to place into the composite container to ensure enough water is being collected to fill the required sample bottles once composite is complete.
8. Before collecting the samples, put on nitrile or vinyl sampling gloves to prevent from contaminating the samples.
9. Also inspect equipment. Make sure nothing is present that could contaminate the sample.
10. Use the green hose to collect the water from the outfall 002.
  - a. This hose is connected to a dedicated submersible pump.
11. Plug the submersible pump into the outlet located near the outfall.
12. Turn switch to "On" to start pump and run for approximately 5 seconds.
13. Use the dedicated graduated cylinder to measure out the correct volume of water that has been found once you multiplied the factor with the GPM's
  - a. Example: Factor  $10 \times 180 \text{GPM} = 1,800$ . The dedicated cylinder measures up to 1 liter. These 1,800 milliliters is (1) liter of water plus 800 milliliters which equals 1,800. The cylinder is marked with measurements.
14. Each time a cut has been added to the 24HR composite container you must record each GPM on the 24hr Composite Monthly/Quarterly form.
15. Place the composite sample immediately on ice in cooler and bring back to the laboratory for storage in refrigerator at 4°C. Finish compositing each sample in the lab and place in refrigerator after each sample is collected and while waiting to ship samples. Refer to Section 5.0 for type of bottle to use.
16. Wear sampling gloves to fill the bottles.
17. On the first day of sampling:
  - a. Go to the receiving water sampling point
  - b. Collect the receiving water either in a cube container or a 1 liter container bottle. Immediately place the sample in a cooler with ice. Place in refrigerator in lab at 4°C until sample is ready to be shipped.
    - i. This will be added to the first cooler to be shipped out.
18. Label each bottle
  - a. Refer to section 5.0 to determine which analyte to test.
19. Fill in the rest of the required info on the label and place a piece of clear tape over labels and place samples in their individual bags.
20. Fill out chain of custody (C.O.C)
  - a. Refer to previous months C.O.C
  - b. This is a way to avoid error and make sure the tests are consistent and the same.
21. Prepare to ship out sample cooler.
  - a. Select cooler and line the inside of cooler with 55gallon clean unused trash bag.
  - b. Place samples and plenty of ice to ensure a tight fit to avoid samples being

damaged in shipping.

- c. Close trash bag and tie it.
  - d. Place a shipping seal over the tied bag to show lab bag has not been tampered with once it left the shippers hands.
  - e. Place the C.O.C on the inside of the cooler lid and close lid.
  - f. Use strapping tape to secure entire cooler from opening while in route to the lab.
  - g. Print out Fed Ex shipping bill and place on top of cooler.
    - i. Coolers are shipped to *GEI Consultants, Inc*
  - h. Leave for Fed Ex to pick up or take cooler to a fed ex pick up location.
22. File all records in the designated area as back up.

### ***Section 9.6 Monthly Outfall-002 downloads***

1. Complete and review JSA
2. Before going to location take equipment:
  - laptop
  - down loading cable
  - Outfall 002 keys.
3. Open Control Panel at Outfall 002.
4. Plug downloading cable into designated port.
  - o Refer to picture below.



5. Connect to laptop.
6. Proceed to download the flow data.
7. Return to office and enter data into NPDES database module.
8. Contact environmental technician if any assistance is needed.

# SECTION 10.0 CHAIN OF CUSTODY (C.O.C)

When samples are sent out to laboratories, they must have a C.O.C with the samples. The C.O.C documents the samples by showing the date and time the samples were collected. As well as the tests needed for the samples. Also the C.O.C relinquishes the samples into the custody of the laboratory, so they may conduct their tests.

## Section 10.1 WET Testing C.O.C Cooler #1

Effluent #1 composite needs to begin Sunday morning, Sunday evening and collected again Monday morning. Receiving water needs to be collected Monday morning.

GEI Consultants, Inc./Ecological Division  
 4601 DTC BLVD., SUITE L100  
 DENVER, CO 80237  
 Main: (303) 662-0100 Lab: (303) 364-1120

### BIOASSAY LABORATORY CHAIN-OF-CUSTODY

CLIENT/PROJECT <u>Chevron Mining Inc.</u> ADDRESS <u>PO Box 469</u> CITY <u>Questa</u> STATE <u>NM</u> ZIP <u>87556</u> PHONE # <u>575-526-7537</u> PROJ MANAGER <u>Schoenbocker</u> SAMPLER <u>AA</u>			TESTS REQUIRED ACUTE CHRONIC C F D T C F A O E R I O E R I O A L G O A D H E A D H E A D T H E R				CHLORINE Measured by: Client <input type="checkbox"/> Lab <input checked="" type="checkbox"/>		
SAMPLE TYPE/SITE	Date Collected	Time Collected					TRC (mg/L)	Date/Time Measured	COMMENTS
Effluent #1 (1.0gal)	5/4/14	0700							
Receiving Water (1.0gal)	5/5/14	0645							
		CP							
		5/5/14							
PROJECT INFORMATION		LABORATORY RECEIVING INFORMATION		CLIENT RELINQUISHED BY <u>Cassandra Padilla</u>					
COURIER <u>FEDEx</u>		CONDITION		DATE/TIME <u>5/5/14 1:00 pm</u>					
TOTAL NUMBER OF CONTAINERS <u>1</u>		TEMPERATURE (°C)		LABORATORY RECEIVED BY _____					
COMMENTS <u>Tests: Chronic Ceriodaphnia dubia and Pimephales Promelas</u>				DATE/TIME _____					

**Section 10.2 WET testing C.O.C cooler #2**

Collect Effluent #2 composite Tuesday morning, Tuesday evening and collect again Wednesday morning and ship out Wednesday morning.

GEI Consultants, Inc./Ecological Division  
 4601 DTC BLVD., SUITE L100  
 DENVER, CO 80237  
 Main: (303) 662-0100 Lab: (303) 264-1120

**BIOASSAY LABORATORY CHAIN-OF-CUSTODY**

CLIENT/PROJECT <u>Chevron Mining Inc.</u> ADDRESS <u>PO Box 469</u> CITY <u>Quetta</u> STATE <u>NM</u> ZIP <u>87556</u> PHONE # <u>575-586-7537</u> PROJ. MANAGER <u>J. Schenbocker</u> SAMPLER <u>AA</u>			TESTS REQUIRED ACUTE CHRONIC C E R T I C A L O F A T H E R I O E A D I O E A D				CHLORINE Measured by: Client <u>D</u> Lab <u>A</u>	
SAMPLE TYPE/SITE	Date Collected	Time Collected				TAC (mg/L)	Date/Time Measured	COMMENTS
<u>Effluent #2 (Organic)</u>	<u>5/7/14</u>	<u>0700</u>			<u>XX</u>			
PROJECT INFORMATION			RECEIVING INFORMATION		CLIENT RELINQUISHED BY: <u>Carlaandra Padilla</u>			
COURIER: <u>FED EX</u>			CONDITION:		DATE/TIME: <u>5/7/14 1:00 pm</u>			
TOTAL NUMBER OF CONTAINERS: <u>1</u>			TEMPERATURE (°C):		LABORATORY RECEIVED BY: _____			
COMMENTS: <u>Tests: Chronic Ceriodaphnia dubia and Pimephales promelas</u>					DATE/TIME: _____			

**Section 10.3 WET testing C.O.C cooler #3**

Final cooler for the week the 24HR composite needs to be collected on Thursday morning, Thursday evening and collect again Friday morning and ship out Friday morning. Saturday delivery labels needs to be placed on cooler.

GEI Consultants, Inc./Ecological Division  
 4601 DTC BLVD., SUITE L100  
 DENVER, CO 80237  
 Main: (303) 662-0100 Lab: (303) 264-1120

**BIOASSAY LABORATORY CHAIN-OF-CUSTODY**

CLIENT/PROJECT <u>Cherem Mining Inc.</u> ADDRESS <u>P.O. Box 469</u> CITY <u>Questa</u> STATE <u>NM</u> ZIP <u>87556</u> PHONE <u>575-586-7537</u> PROJ. MANAGER <u>Schombacher</u> SAMPLER <u>CP</u>			TESTS REQUIRED ACUTE CHRONIC C F D T C F A O E R A P R C F A O R I H H O E T H G H E O I E N U T E R I H A E R A D A I A D A E R				CHLORINE Measured by Client <input type="checkbox"/> Lab <input checked="" type="checkbox"/>		
SAMPLE TYPE/SITE	Date Collected	Time Collected					TRC (mg/L)	Date/Time Measured	COMMENTS
<u>Effluent #3 (Ogals)</u>	<u>5/8/14</u> <u>5/9/14</u>	<u>0745</u>	XX						
PROJECT INFORMATION			LABORATORY RECEIVING INFORMATION		CLIENT RELINQUISHED BY <u>Callandra Redilla</u>				
COUR. ER. <u>FEDEX</u>			CONDITION		DATE/TIME <u>5/9/14 1:00pm</u>				
TOTAL NUMBER OF CONTAINERS <u>1</u>			TEMPERATURE (°C)		LABORATORY RECEIVED BY _____				
COMMENTS <u>Tests: Chronic Ceriodaphnia dubia and Pimephales promelas</u>					DATE/TIME _____				

Section 10.4 24hr Composites for Monthly/Quarterly C.O.C

This is the C.O.C for 24hr composites for the Monthly/Quarterly requirements. This needs to be completed the first month of every new quarter for all 4 quarters. Dissolved Uranium must be sampled once a year this also must be sampled the first quarter of year (Nov. 1<sup>st</sup>-Jan. 31<sup>st</sup>). Collect enough water to send in required analysis.

ALS Laboratory Group		Chain-of-Custody		Date	10/3/2013	Page	1	of	1	Lab ID																									
 225 Commerce Drive, Fort Collins, CO 80524 TF: 970-443-6511 PH: 970-430-6511 FX: 970-430-6522		Project Name: <b>Outfall-002 Monthly &amp; Quarterly NPDES</b> Sampler(s): <b>Environmental Techs</b>		Turnaround	Standard	or	<input checked="" type="radio"/>	Rush	Due	Disposal	By Lab	Return to Client																							
REPORT TO:	Jeffery Schoenbacher																																		
PHONE:	575-586-7537																																		
FAX:																																			
E-MAIL:	jschoenbacher@chevron.com																																		
COMPANY:	Chevron Mining Inc.																																		
ADDRESS:	PO Box 469, Questa, NM 87556																																		
Provide additional information as needed in Comments below.			Circle Analytical Method Above				Circle Analytical Method Above																												
Sample ID	Date	Time	Lab ID	Matrix	PH	No. of Containers	Alkalinity	Fluoride Total	Chloride	Sulfate	OC Pesticides	Nitrate+ nitrite	TSS	Explosives	Dissolved Metals	Total Cyanide NaOH	Total Metals (ICP) or HG	Dissolved Metals (ICP) or HG	Total Metals (ICP-MS)	Dissolved Metals (ICP-MS)	Hexavalent Chromium	Inorganic Anions	Uranium	pH	Perchlorate	Actinides	Gamma Isotopes	Gross Alpha / Beta	Total Alpha-Emitting Radium	Radium 226	Radium 228	Strontium 90 (Total RadioSr)	Tritium	Radon 222	
Outfall-002-T01N	10/2, 3/13	7:00am	W			3	X					X			X	X	X	X	X				X												
Outfall-002-T01D	↓	↓	↓			3	X					X			X	X	X	X	X				X												
* Zone (Circle): EST (S) MST PST Matrix: O = oil S = soil NS = non-soil soil W = water L = liquid E = extract F = filter For metals or anions, please detail analyte list below. Provided Hard Copy/Edd to URS? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>										Relinquished By: (1) Signature _____ Printed Name: Cassandra Pacilla Date: 10/3/13 Time: 1300 Company: Chevron Mining Inc.		Relinquished By: (2) Signature _____ Printed Name: _____ Date: _____ Time: _____ Company: _____																							
Metals= Al, As, Cd, Co, Cu, Pb, Mn, Mo, Zn, Hg Data Packages: Level 2 (Form Only) Level 4 (Fully Validatable)										Received By: (1) Signature _____ Printed Name: _____ Date: _____ Time: _____ Company: _____		Received By: (2) Signature _____ Printed Name: _____ Date: _____ Time: _____ Company: _____																							



# SECTION 11.0 FLOW FORM FOR COMPOSITES

## Section 11.1 WET Test/24 Hr. Record for Monthly and Quarterly

The following form is to be filled out when conducting composite.

Chevron Mining, Inc.  
 Outfall 002  
 24 Hour Composite  
 Monthly  
 Quarterly

Month: Date	Quarter: Time	Factor	GPM	Volume (mLs)	Sampled by
			x		
			x		
			x		
			x		
			x		

Relinquished sample into fridge. Temperature set at 4°C.

Date	Time	Technician	Verify 4°C

Comments:

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Description of Effluent:

Color \_\_\_\_\_  
 Odor \_\_\_\_\_  
 Turbidity \_\_\_\_\_

Visible Foam  
 Floating Solids

Clear       Slightly Cloudy       Moderately Cloudy       Very Cloudy

QA/QC Samples:     None     Field Duplicate     Rinsate Blank     Field Blank     Extra Volume

## **SECTION 12.0 RECORD KEEPING**

Copies of all forms will be kept in the Environmental room. A digital recordkeeping will be the NPDES sampling data entry module. The NPDES Sampling database is located on the Questa's O drive. Environmental Technicians can be asked for the specific file locations of the hardcopies if not found in the environmental room.

Hard copies of forms will be:

- Calibration forms
- Chain-of-custody
- Standard operating procedures (SOP)
- Log books
- Field forms
- Sample bench mark histories.

## **SECTION 13.0 NPDES DATA ENTRY FOR 002**

To enter data into the NPDES sampling data module, open the NPDES sampling data entry on the O drive. Click 002 NPDES data entry.

Tabs to populate include:

- Daily average flow data
- Composite 24HR Average
- Daily pH measurements

All must be completed by the end of each month.

The information is collected on the following schedule:

- 24 hr. composite- monthly/quarterly are collected and entered the first week of each month.
- pH reading are collected and recorded daily.

## **SECTION 14.0 SAMPLE STORAGE AND SHIPPING**

All samples will be stored on ice to obtain a temperature of 4°C in an insulated cooler immediately following sample collection. Also a completed chain-of-custody form for each cooler will be placed in a Ziploc bag and taped to the inside of the cooler lid. Coolers will be wrapped with strapping tape at two locations to secure lids. Signed and dated custody seals shall be placed on the outside of each cooler in two places in such a manner as to allow detection of tampering the seals must be broken to open the cooler.

**Attachment 2**

**Chevron Mining, Inc.**

**pH Meter Calibration and Measurement for Outfall 002**

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Calibrated by: \_\_\_\_\_

Temperature of Buffer Solution 7.0+/-0.01: \_\_\_\_\_

Temperature of Buffer Solution 10.0+/-0.02: \_\_\_\_\_

Recheck pH Buffer Solution 7.0+/-0.01 @ (25c) \_\_\_\_\_

Recheck pH Buffer Solution 10.0+/-0.02 @ (25c) \_\_\_\_\_

Field or Laboratory Calibration

Serial # \_\_\_\_\_

Date of Measurement: \_\_\_\_\_

GPM: \_\_\_\_\_

Sample Collection Time \_\_\_\_\_

1<sup>st</sup> pH Measurement Time \_\_\_\_\_

pH of Sample \_\_\_\_\_

2<sup>nd</sup> pH Measurement Time \_\_\_\_\_

pH of Sample \_\_\_\_\_

pH Taken by : \_\_\_\_\_

Q/C Check Sample# \_\_\_\_\_

Q/C True Value \_\_\_\_\_

Q/C Value Found \_\_\_\_\_

Advisory Range for Q/C \_\_\_\_\_